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THE publication of the index to Volume 54 of the ENGINEERING AND MINING JOURNAL for the six months ended December 31st has been retarded by the necessity of putting the whole force of the office on the statistical volume, now nearly completed. The index will be issued, however, at an early date.

THE Harney Peak Tin Mining, Milling and Manufacturing Company's mines and mills were closed down on the 2d inst., after a short and unsuccessful run. Superintendent J. S. Childs, who had been in this city in consultation with the American owners of the property, stated, it is said, that this had been done in accordance with a decision arrived at by the owners, and that the suspension will be permanent. This was to be expected by those who have followed the reports upon those mines, published in the ENGINEERING AND MINING JOURNAL from time to time. There will probably be many explanations of the stoppage, but the real cause is the lack of tin in the ore There is now not a tin mine in operation in the country.

IT IS proposed to erect a large copper smelting and refining establishment at Salt Lake City, Utah, to treat ores from Utah, Nevada and adjoining States, and to refine Montana matte. The supply of copper ore in Utah is small, but the promoters of this enterprise argue that so far no encouragement has been given to the mining of copper ores there or to prospecting for them. Obtaining a reduction of freights it is estimated that some money can be made out of Montana matte. Dry silver ores could also be treated.

Salt Lake is well situated in several respects for the location of such a plant, but we fail to see how it could ever compete, so far as treating Montana ores and matte are concerned, with smelters at Great Falls, Mont., where power and fuel are both cheap. If such a smelter is built in Salt Lake it will certainly have to rely almost entirely upon Utah ores.

The adoption, after Capt. JOSIAH THOMAS' favorable report, of the California Stamp Mill at the Dolcoath tin mine, Cornwall, may lead to its general introduction in the tin mining interests at least. The indifference or even distrust of Europeans toward our milling machinery is somewhat hard to understand. It is certainly remarkable that nearly 40 years after our stamp mill was perfected it should be introduced in Cornwall and be running side by side with its crude prototype, the Cornish iron shod square beam wooden stamp.

It is true that in Germany, where American stamps were introduced at an early date, the products in several instances were found to be unsuited to concentration, but we can hardly believe the statement there made that the iron stemmed stamp is more expensive in operation than the old-fashioned wooden one. The Hayle machine shops in Cornwall have long made "California stamp mills" "for the colonies," but the Cornishman at home is the most "conservative" or, as we would put it, the least progressive of intelligent managers, and they cling to their antediluvian methods of ore concentration long after the rest of the world has abandoned or even forgotten them. Cornwall is an excellent place to study the ancient history of mining, but a difficult field in which to introduce progressive methods.

THE California State Mining Bureau has been seriously criticised of late, and its strongest opponents, whose interests are agrarian, have not hesitated to say that it should be done away with. The annual reports, in Governor MARKHAM'S opinion, are masses of padding of little actual value, and their cost, he says, is entirely disproportionate to the information they contain. The Governor, who will soon appoint the successor to WM. IRELAN, JR., the present incumbent of the office of State Mineralogist, does not agree with the radical opponents of the bureau. He believes that it should exist, and that in proper hands it may be, what it has not been, an institution which, through the collection of known facts and the discovery and announcement of new principles, may be o the utmost service to the miner.

In theory the California State Mining Bureau is an excellent machine, but it works badly in practice. Politics, which impaired the usefulness of the United States Geological Survey, has here been destructive. Appropriations secured through political influence were spent in conciliating those whose votes could secure other sums. Counties whose interests were agricultural and whose mineral resources were unimportant were thoroughly explored and favorably reported upon, in order to obtain the influence of their legislators. Some districts which had been the back bone of California mining were barely touched upon, the votes of their representatives—mining men—being considered secure. Where mines were examined and the data recorded it was done in such a manner as to make it evident that the object was to conciliate and even benefit the individual owner rather than the whole industry, and the information published in the annual report was in consequence far from trustworthy.

The Mining Bureau by this foolish policy has lost the friendship of its former adherents and has failed to secure the respect of those to whom

t has been subservient. It is to be hoped, however, that it will not be suspended, or even its appropriation curtailed. It has a most useful field before it, and it can be, if politics is kept from its doors, of paramount service to the miner.

THE PRODUCTION OF LEAD.

The amount of lead imported in ore in 1892 amounted to 26,734 tons of 2,000 lbs. The lead refined in bond and exported amounted to 12,874 tons, or a total of 39,608 short tons, which, deducted from our total production, 218,500 tons, leaves 187,892 short tons as the make from domestic ores, as against 178,133 tons from domestic ores in 1891 (when 2,700 tons of bullion were refined in bond, the total production being 180,833 tons in 1891) and 143,859 tons in 1890, when none was refined in bond.

The amount of "soft lead" produced in 1892, which we gave as 31,000 tons, does not represent the whole output from Missouri, Kansas, Wisconsin and Illinois ores, for a very important amount of these was mixed with argentiferous ores from the West, and the lead from them was marketed as desilverized. The distribution by States is given fully in the "Mineral Industry," now in press.

GOLD AMALGAMATION.

The London *Mining Journal* of December 24th contains a full report of a meeting of the Institution of Mining and Metallurgy, which was devoted to the reading and discussion of a paper on "Gold Amalgamation," by Mr. C. C. WARNFORD LOCK, whose portrait, with a biographical sketch, appears in the same journal. Mr. LOCK'S father is the author of a large book on "Gold: Its Occurrence and Extraction," which possesses considerable value as an industrious and comprehensive composition, though not as a technical authority. I am sorry to say that the son, if one may judge from his paper on the subject, is without practical knowledge of gold amalgamation. Worse than this, the paper is essentially a thinly disguised puff of a new machine, in which "by means of electro chemical action, produced in a very simple manner, the mercury in an unbroken body is permeated by constant streams of hydrogen and sodium." Concerning this apparatus MR. LOCK utters a good deal of what must be recognized theoretical nonsense, and gives a number of reports concerning its performances in "Africa, America and Australia," which it is quite permissible to doubt, because they are not presented in a form which commands confidence. He delicately avoids naming the machine, as if that would be to misuse the opportunity afforded by a technical paper, but he seems to think that the mere omission of the name from what is practically an advertising puff is all that is required to make it acceptable as a technical paper. On the contrary, MR. LOCK should have named the machine frankly, told who makes it and sells it and at what price, and avowed his own connection with it, if he is at all interested. But he should not have been content with the vague summaries of its surprising performances, which constitute the proof of his astounding theories.

With the exception of this electro-chemical paragon, I notice but one other machine specially mentioned with approval by Mr. LOCK. This is "an amalgamator composed of a series of revolving dishes superposed on a verticle spindle," so as to provide "an enormous area of amalgamating surface within a very small space," concerning which apparatus he says that three years ago, after a number of successful trials, he expressed himself in its favor, and adds: "Recent reports from Montana, where the machine has been in operation for some time on tailings from the mills of the Montana and other companies, more than confirm my opinion. The saving of 80 cents a ton, which it effected on the Drumlummon tailings, means an addition of £14,000 a year to the income of that mill."

The machine here referred to is the "Jordan Centrifugal Amalgamator," and I happen to know something of its trial at Marysville, at the Drumlummon mill of the Montana Company, Limited. It ran 26 days, and the total clean-up was $18 54. If Mr. LOCK'S other statistics of economy are similar in character to this specimen they are quite worthy of his chemical and metallurgical theories. He has simply been deceived, as well meaning people have been before him, by delusive analogies, plausible laboratory experiments and misleading reports from others. As he is a gentleman of intelligence in other departments, personally most agreeable and popular, and an officer and active promoter of the new Institution of Mining and Metallurgy, it is to be regretted that he should have identified himself with crude statements which can only discredit him among practical metallurgists.

A number of gentlemen took part in the discussion of Mr. LOCK'S paper; and although their evident personal liking for him prevented them from severity of criticism, those who were best entitled to confidence as expert authorities did not fail to make it pretty plain that they disagreed with him in every important particular; and especially in his condemnation of amalgamated copper plates, and his assertion that "mercury troughs are capable of doing much better service." Whoever does not know how much more readily gold unites with an amalgam already formed than with liquid mercury can add little to the valuable literature of the subject, because he has left A out of his alphabet.

Mr. LOCK and many other would-be reformers of practice are on the wrong tack altogether. They are trying to find an apparatus, which, with one crushing and one amalgamation, will save the maximum amount of gold. According to all sound analogy and experience, they will never do it in the world. Successive operations, beginning with relatively coarse crushing, and ending with the treatment of slimes, are necessary to maximum economy and efficiency of extraction. This was found out long ago; and the contrary proposition, which begins to be agitated again, is simply the revival of an exploded error. R. W. R.

THE POSITION OF ALUMINUM.

The great advance that has been made in the metallurgy of aluminum within the past ten years is one of the most hopeful signs of the application of scientific principles to commercial problems. When one recalls the status of this matter in 1880 when aluminum was but little more than a plaything, and an expensive one at that, and then refers to the present condition of the industry, he is impressed with two considerations. First, that so much has been done to cheapen the processes for the extraction of this metal from its ores, and, second, that in all probability the methods now in use will be discarded before 1900. A great deal of laborious and costly work has been done, and the result is that aluminum can be bought for 50 cents per pound as against $12 in 1886. This is indeed a great achievement and one of which any man may well be proud. It is often quite as useful to point out the way in which a desired result is *not* to be reached as to show how it may be attained. It is in this direction that a great deal, if not most, of the work that has been done on the commercial extraction of aluminum is valuable. In spite of the wonderful cheapening of the product, in spite of the outlay of hundreds of thousands of dollars, in spite of the beautiful pictures that are held up to view of the future of this magical metal, what have we to show for it all? So far as concerns the future of aluminum it may be said that unless it can be made in large quantities, just as lead or copper or zinc, it can not hope to enter as an important factor in the great industries.

It must be smelted in large quantities direct from its ores, or obtained as a bye-product in the preparation of some widely consumed substance, ere it will take in trade the position its qualities command.

A great deal of nonsense has been written about aluminum and a great deal of vital force expended in prophesying its brilliant influence upon civilization. The truth is that the industry is but little beyond the experimental stage and may be compared to the manufacture of iron in the days of Tubal-Cain. It is not likely that at the present time the greatest producer of aluminum is making regularly one ton per day, and the total daily output of the world is short of five tons per day. And this result has been reached after a quarter of a century of constant investigation and at a cost of vast sums of money.

It is, nevertheless, a result to be proud of, for it has brought into use, if not on a large commercial scale at least on an important one, a valuable metal. But we do not think that the further prosecution of electrical methods, by which alone aluminum is now made, will bring the cost of it to the point at which it will become a prominent metal, *unless*, and we desire to lay especial stress on this, they proceed along the line of direct reduction. Even here it is by no means certain that they can make it cheap enough. Aluminum is cheap now, compared to the prices of ten, or even five, years ago, but the plea we make is that it is not cheap enough. One reason why the prominent metals are cheaper now than they have ever been is because of the immense output, and this in turn is conditioned by modern methods, the use of improved machinery and better management.

Looking at the matter from a standpoint of practical results and the cost of them it would seem that there is too much reliance placed on electrical methods, whether electrolytic or electro-chemical. It may be urged that inasmuch as by means of electrical methods aluminum has been reduced in price from $12 to 50 cents per pound, and inasmuch as large investments have been made in such plants, it were better to attempt the solution of the problem in this way; that, in fact, more is to be expected from methods that have already done so much than from others that have accomplished nothing. And this is sound reasoning so far as it goes, but it does not go far enough. It proceeds on the assumption that electricity is capable of indefinite cheapening.

There is a very inviting field for research here, and one that to the earnest metallurgist is as attractive as the refining of cast iron was to KELLY and BESSEMER in the early fifties.

While we would not be understood as condemning the electrical reduction methods, we would encourage those who seek by other means to make cheaper aluminum. Those who have brought the present methods up to their known efficiency are probably best qualified to investigate possibilities that lie in other directions, for they know the commercial limitations affecting the employment of the current for large and regular

products, and have the skill and energy and professional training that will be needed. Let us have cheaper aluminum, and after that, perhaps, still cheaper aluminum. Tubal-Cain's furnace did very well for his day and time, but would be now somewhat out of date, not because it could not make good metal, but because it could not make enough of it or make it cheaply enough.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.

Small Talk About Business. By A. E. Rice. Published by The Fremont Publishing Company, Fremont, O., 1892. Pages 60. Price 75 cents.

Theory of Structures and Strength of Materials. By Henry T. Bovey, M. A., D. C. L., F. R S. C. Published by Messrs. John Wiley & Sons. New York, 1893. Pages 817. Price $7.50. Illustrated.

A Report on the Iron Ores of Missouri. From field work prosecuted during the years 1891 and 1892. By Frank L. Nason, Assistant Geologist. Being Vol. II. of the Geological Survey of Missouri. Published by the Geological Survey. Jefferson City, Mo., 1892. Pages 365. Illustrated. Also map.

Catalogue of American Localities of Minerals. By Edward Salisbury Dana. Being a reprint from the sixth edition of Dana's "System of Mineralogy." Published by John Wiley & Sons, New York, 1893. Pages, 51. Price, $1.00.

A Report on the Mineral Waters of Missouri. By Paul Schweitzer, Assistant Geologist. Being Vol. III. of the Geological Survey of Missouri. Published by the Geological Survey. Jefferson City, Mo., 1892. Pages 257. Illustrated. Also Map.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Russell Process at the Marsac Mill.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Allow me to call your attention to several errors in my article published in the ENGINEERING AND MINING JOURNAL of December 17th, 1892.

The statement that no payment has been made for the gold in Marsac bullion since refining of the sulphides commenced is wrong. It has been paid for at the rate of $20.67 an ounce. This misconstruction was due to the omission to fill out a blank space in a table accompanying my article. On the sixth line from the bottom of the sixth column of page 580, the extraction of silver by lixiviation at the Marsac mill should read 91 9%, instead of 91·0%.

In the tabular matter in the second column of page 580, the difference in favor of the Marsac mill is stated to be $62.5½; this is obviously a transposition of the correct figure, $2.65½. W. G LAMB.

PARK CITY, January, 1893.

The Non-Homogeneity of Gold Bars.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: As an appendix to the correspondence anen the homogeneity of gold bars which appeared recently in the JOURNAL, the following note may prove interesting: M. de Réaumur, writing in the reports of the *Academie Royale des Sciences*, p. 88, (April 27, 1718), says of the large gold nuggets on record: "In the same piece of gold the fineness varies considerably. The nugget examined by the academy in 1716, and belonging to Don Juan de Mur. corregidor of Arica, was found to vary in fineness; in one place it was 23½ carats fine; in another 23, and in a third 22 only; this nugget weighed 56 marcs. Another nugget, weighing 66 marcs.* mentioned by the Père Feuillée and belonging to the collection of Don Antonio Porto Carrero, was shown to be, on top, 22 carats 2 grains fine; a little lower it gave only 21 carats and ¼ grain, while 2 in. above the bottom the fineness had sunk to 17½ carats."

These obervations, recorded 175 years ago, show that the non-homogeneity of a natural gold ingot at least is not a discovery of to-day.

JOHN HEARD, JR.

PARIS, January, 1893.

Pyritic Smelting.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: The article entitled "Pyritic Smelting" in your number of January 14th, 1893, will strike Colorado men as rather peculiar. The statement that slag carrying 5½ oz. silver has been run through a furnace using the pyritic or matte concentration process is incorrect.

At Leadville Mr. Holden has two 120-in. water jacket lead furnaces in operation and two more under construction. They are using the old Grant dump, which has been hand sorted once by other people, and the old La Plata dump, adding enough lead ore to make a proper amount of bullion. Carbonate ores being somewhat scarce, galena is used, and, of course, some matte is formed. Coke is used for fuel.

Across the California gulch, on the site of the old La Plata Smelter, the Bi-Metallic Smelting Company is operating one stack and building two more of peculiar design, and are using the "Austin" process. The furnace was designed and built by the Colorado Iron Works, Denver. Raw sulphide ores direct from the mine are fed into the furnace, with the necessary proportions of quartzose ore and limestone to form slag. No fuel is used in the slack, except, perhaps, an occasional charge of coke when some irregularity occurs. A. Y.

EDDY, N. Mex.

[If our correspondent will read the article on the desilverization of lead slags on another page he will observe that Leadville slags running even so low as 5½ oz. have been treated by a matte concentration process.—ED. E. & M. J.]

* marc = 8 oz.

The Percentage of Iron in Magnetite.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I notice with interest in your issue of the ENGINEERING AND MINING JOURNAL for January 28th an editorial by Dr. R. W. Raymond on "The Percentage of Iron in Magnetite," in which he explains the excess of metallic iron over that necessary to form the normal magnetite oxide (Fe_3O_4), in the analysis of Gunflint Lake ore, as being most probably due to an excess of ferrous oxide (Fe O) in the magnetite itself, corresponding to an abnormal formula x. Fe O. Fe_2O_3. I should like to offer a further suggestion, namely, that such an excess may be due, not to an excess of Fe O in the magnetite itself, but to its presence in a gangue of silicate of iron, etc., as hornblende, pyroxene, etc. This is, for instance, the case in the ore from the Cranberry mine, Mitchell County, N. C., where the gangue is chiefly hornblende or pyroxene, epidote, calcite, quartz, etc. An analysis of this ore (run of mine used in furnace August 4th, 1889) by Mr. Porter W. Shimer, of Easton, Pa., shows:

Fe_3O_4 = 49·94%; Fe O = 10·32%; $Si O_2$ = 25·96%; Al_2O_3 = 0·99%; Mn O = 0·55%; Ca O = 10·62%; Mg O = 1·67%; P_2O_5 = 0·018%; S = 0·041%. Total, 100·109%.

If we calculate the metallic iron (44·19%) to Fe_3O_4 we have 61·02%, giving a total addition of 100·869 for the analysis, an excess of nearly 0·9% above its possible content, which would be considered "off."

I know nothing of the character of the gangue of the Gunflint Lake ore, and the above suggestion may be totally inapplicable to that particular case; undoubtedly it is, for the excess there is much greater than would be due to Fe O in hornblende alone. I simply offer my suggestion as bearing on the same general point, though showing a different cause, yet one which may be taken into consideration in special cases.

CHAPEL HILL, N. C., Jan. 30, 1892. H. B. C. NITZE.

PRODUCTION OF BESSEMER STEEL INGOTS AND RAILS IN THE UNITED STATES IN 1892.

Through the courtesy of the Bessemer steel manufacturers, the "Bulletin" of the American Iron and Steel Association has been able to present complete statistics of the production of Bessemer steel ingots and of Bessemer steel rails of all weights and sections in the United States in 1892, except the comparatively small quantity of rails made by other manufacturers from purchased blooms. In these statistics of ingots the production of the few Clapp-Griffiths and Robert-Bessemer plants, and also the production of steel castings, are included. The total production of ingots in 1892 was the largest in our history, exceeding the large production of 1890, and the production of rails was much larger than has generally been supposed.

The following table gives the production of Bessemer steel ingots in each half of 1892, and the total production in that year compared with the total production in 1891. A statement of the ingots produced by the Clapp-Griffiths works alone is added to the table:

States—Ingots.	First half 1892. Gross tons.	Second half 1892. Gross tons.	Total 1892. Gross tons.	Total 1891. Gross tons.
Pennsylvania	1,218,504	1,169,508	2,388,012	2,048,330
Illinois	437,067	443,167	880,234	605,921
Ohio	200,946	211,036	411,982	333,666
Other States	202,411	278,333	480,744	259,500
Total	2,058,928	2,102,044	4,160,972	3,247,417
Clapp-Griffiths only	36,974	30,552	67,526	65,389

The total production of Bessemer steel ingots in 1890, the year of largest production prior to 1892, was 3,688,871 gross tons, which was 472,101 tons less than in 1892.

The total production of Bessemer steel rails in 1892, with the exception above noted, was 1,458,743 gross tons, an increase of 219,350 gross tons over the production in 1891. The following table shows the production in each half of 1892 and the total production of the year compared with that of 1891, with the exception above noted for both years:

States—Rails.	First half 1892. Gross tons.	Second half 1892. Gross tons.	Total 1892. Gross tons.	Total 1891. Gross tons.
Pennsylvania	474,018	411,634	885,652	849,556
Illinois	240,925	209,628	450,553	364,725
Other States	57,493	65,045	122,538	25,112
Total	772,436	686,307	1,458,743	1,239,393

The production of Bessemer steel rails by the Bessemer steel manufacturers in 1890 was 1,797,489 gross tons. The production of 1892, while much larger than that of 1891, was 338,746 tons less than that of 1890.

Effect of Turpentine Gathering on the Timber of Longleaf Pine.—In Circular 8 of the Forestry Division, published about a year ago, it was stated that tests made on timbers of Longleaf Pine, bled or unbled, lent countenance to the belief that bled or tapped timber did not suffer in strength by virtue of the tapping. Further tests and examinations permit now the announcement without reserve that the timber of Longleaf Pine is in no way affected by the tapping for turpentine. This refers to its mechanical as well as chemical properties, and hence even the reservation that it might suffer in durability is now eliminated and any prejudice against the use of bled timber in construction, wherever the unbled timber has been considered desirable, must fall as having no foundation in fact, being based only on vague belief, proved to be erroneous. The basis for the statement regarding the mechanical properties is furnished by a series of tests comprising not less than 300 tests on 32 trees of this Pine, bled and unbled, from various localities. To determine whether any changes in the chemical composition take place, a series of chemical analyses of bled and unbled timber has been made, which indicates that the resinous contents of the heartwood are in no wise affected by the bleeding, the oleoresins of the heartwood being non-fluid, the whole turpentine flow is confined to the sapwood.

FLAMELESS EXPLOSIVES IN THE NOVA SCOTIA COAL MINES.

Many of the coal mines in Pictou County, Nova Scotia, are so fiery that it has always been dangerous to use gunpowder for blasting purposes. Before the days of flameless explosives it was absolutely necessary to close down some of the pits. Up to the year 1890 nothing but gunpowder was known in Nova Scotia. In that year roburite was first introduced from England, and almost simultaneously the manufacture of "acadine" was commenced by the Acadia Powder Company, at Waverley, N. S. Mr. H. S. Poole gives some account of the experience gained there with these two flameless explosives in a paper read before the Mining Society of Nova Scotia. So far most of the work has been done with roburite. At first the miners complained loudly of missed shots—of shots that only did half the work expected of them, and of charges that failed to explode on the detonation of the cap. The trouble chiefly arose from the men failing to comply with the instructions. They persisted in tamping in the same way as they had been accustomed to tamp powder, although they were urged not to press home the first six inches of stemming, and informed that if the cartridge was rammed hard, not only was there danger of the cap exploding, but if the roburite was consolidated it would not explode, or only partly explode. The irresistible desire to ram hard arose from fear that part of the shot would be lost and that the coal would cut where the hard tamping began and not at the back of the shot. Other men found a difficulty in understanding the difference between warmth and dryness. They would open cartridges an unnecessarily long time before use, let them lie on the damp pavement and cover them over with a coat with the idea that they were keeping the damp away. Difficulty also arose from some of the cartridges being quite hard when they arrived from the makers. The men were told to roll or work them in the hand until they were soft, but some of this form of cartridge failed to completely explode and so caused discontent amongst the men. Another source of trouble came from the holes not being properly rounded. Catridges would jam in a cornered hole and when forced back were so consolidated that the roburite failed to explode. All these difficulties are now past and gone and the only two grievances remaining are that we have to pay for the cartridge paper at the price of the roburite, and that it is necessary to use a detonator more powerful than that required by acadine.

Up to the present time about 7,300 lbs. have been used, and the number of times that flame has been observed is small. In four cases the roburite was set on fire by the detonation of the cap and burnt without explosion in the hole behind the tamping. What the roburite was made of in these catridges was not ascertained, and no satisfaction was obtained by inquiring of the makers in England. The light or glow reported to have been seen in one or two cases may have come from a back in the coal or from a short circuit of naked exploding wires.

At first the men used too much roburite, but have with practice learnt the right amount to use. At present it is found that weight for weight, it is about 2½ times stronger than gunpowder. It has the advantage of not being affected by cold, but it produces a larger proportion of small coal. It has the disadvantage common to all compounds containing ammonium nitrate, i. e., of absorbing moisture on exposure to the atmosphere, by which it is at first weakened and ultimately prevented from exploding. The cartridges as usually made are dipped in paraffine and so made waterproof, but it has been found desirable to store these cartridges in magazines where the air is dried by a steam pipe, taking care not to raise the temperature above 90° F.

Acadine is an explosive which is not used much in any other country in the world. It is a mixture of ammonium nitrate with nitro-glycerine. In England the manufacture of mixtures of ammonium nitrate with guncotton or nitro-glycerine is prohibited because all ammonium salts when exposed alternately to moist and dry air at slightly elevated temperatures lose traces of ammonia and become acid; and guncotton and nitro-glycerine are seriously affected by traces of acids, and are decomposed sometimes violently by them. In Pictou County, however, it has been used with impunity, but care has always been taken to use it as short a time after making as possible. It can be kept for many hours in a specially made box which holds hot water, and so it can be used in the coldest weather. Cartridges that harden otherwise than from cold have been found efficient, and hard tamping does not reduce the explosive power. As, however, it requires also a detonator to explode it, it is well not to tamp the first few inches of stemming next the charge. The strength of the explosive is about 50% greater than gunpowder. It is cheaper than roburite and requires a less expensive detonator. If a charge fails to explode on the detonation of the cap, a primer with a fresh cap will explode the charge. This is not the case with roburite, as the detonation of the cap consolidates it and prevents its subsequent explosion. In only one case has a light been observed during the use of 6,400 lbs. A 3-ft. bench cut on the low side had a 3-ft. 6-in. hole charged with 12 oz. of acadine. The shot cracked the back and along the high side, lifting the bench. The light was shown along the high side.

The firing of the shots is done entirely by electricity. Both magneto-electric and dry-cell batteries are used. The latter are preferred by the men on account of their greater lightness, but their lives are short. The magneto-electric firers are low tension and consequently heavy to carry about. It is not considered advisable to use high tension generators on account of the fiery character of the coal.

A novel form of heavy freight engine for mineral traffic has been built for the London & North Western Railway in England, from the designs of Mr. F. W. Webb, Locomotive Superintendent. It has eight wheels, all coupled, 4 ft. 6 in. in diameter. The boiler is 15 ft. 6 in. long, and the tubes are divided into two lengths by an intermediate combustion chamber. The two cylinders are 19½ in. in diameter and 24 in. long and the initial steam pressure is 160 lbs. per square inch. The total weight of the engine is 104,916 lbs. and the tender weighs 56,000 lbs. This engine is the most powerful freight engine in use in Great Britain.

THE DESILVERIZATION OF LEAD-SLAGS.*

By H. A Keller.

After an absence of over two years, the writer returned to Leadville in March, 1890. The change which had taken place in the conditions of smelting during so short a time seemed almost incredible. Lead-carbonates had been still further replaced by refractory sulphides, and clean dry ores had been crowded out, to a large extent, by magnesian "fines." The same furnaces which in 1887 had averaged with ease 160 charges daily (of 800 lbs. ore and lime), and had made clean slags, could now put through scarcely 50% of their former tonnage. Several thousand tons of rich slag had already been accumulated, owing to the large amount of impurities—notably zinc—contained in the ores, and to a correspondingly rapid falling off of that valuable ingredient lead.

After many trials, it proved impossible, under the circumstances, to avoid rapidly adding to this undesirable stock, without resorting to treatment in a separate furnace. As early as 1888, the writer had desilverized rich slag-shells in a furnace without crucible. At that time, by reason of the small percentages of zinc, a mere re-smelting, with the addition, when practicable, of small amounts of copper-sulphides or oxides, was found amply sufficient.

A large proportion of zinc causes the molten matte to be mushy, and also decreases its specific gravity. This circumstance increased the difficulty of the Leadville problem. Determinations made while slag-assays ran high showed the specific gravity of the matte to fall as low as 4·5, while the slag reached 3·75. The consequently unavoidable imperfect separation could be rendered complete only by producing a liquid slag together with additional quantities of heavy matte. With this view, pyritic smelting was first tried, with fair success. But not until the introduction of copper were really satisfactory results obtained. I give below the record of a run made in January, 1891:

Smelted: Pyritic ores, 83 tons; copper ores, 319 tons; total ore, 402 tons, containing 4,447 oz. silver and 40 tons copper; slag, 3,107 tons; grand total, 3,509 tons material (113 tons daily); coke used, $3,092, being 384 tons at $8 = 10·9%; labor, $2,077; direct expense, $5,149, or $1.47 per ton.

Produced: Matte, 186 tons, containing 17,350 oz. silver and 37 tons copper = 20% copper; average of resulting slag: silver = 0·785 oz. per ton: SiO_2 = 33·3%.

Other runs gave similar results; the desilverized slag averaging as low as 0·76 oz. silver per ton. Since the supply of pyritic and copper ores was limited, they were at times replaced with siliceous ores averaging 71% SiO_2. All the results proved the advisability of desilverizing many slags which it had heretofore been customary to consider as refuse.

Of the 17,350 oz. silver contained in the resulting copper matte, 4,225 oz. represent 95% of the silver in the ores, leaving 13,125 oz. silver obtained from the slag.

As it is likely that about 3,200 tons of slag were produced, the original slag must have contained: 13,125 oz. silver obtained in matte, 2,512 oz. silver thrown over in slag, 823 oz. silver, an extra allowance of 5% metallurgical loss, a total of 16,460 oz. silver, or 5.3 oz. per ton, 80% of which was saved.

The furnace used for that purpose was one of the regular 36 × 80-in. lead-furnaces. Its crucible was filled by tamping with a mixture of sand and loam, on top of which one course of firebrick was laid edgewise. The tap-jacket was provided with two tapering openings (1½ in. in diameter at the small end), the centers of which were 4 in. apart. The 3-in. tuyeres were raised so as to bring the line of their centers about 15 in. above the upper tap-hole.

From the latter the slag ran almost continuously, overflowing into slag pots through a settler. The latter was changed hourly; and, during this operation, the blast was cut off and the furnace was relieved of all its matte, by tapping through the lower opening, directly into three or four slag pots, in which it was then allowed to cool. From the cold cones the matte was broken and added to that obtained in the settlers, which, for more convenient handling, were also emptied and cooled in small pots. The regular blast, which was varied in accordance with the running of the furnace, averaged about ¾-lb. pressure per square inch.

Under different circumstances many improvements might be suggested which would still further reduce expenses. For example, automatic feeding, and better facilities for removing the refuse; a continuous slag flow by tapping the blast, together with a heavily lined, large settler, which would answer for a long time before changing. With suitable sulphides, where such are available in large quantities, hot- in place of cold-blast will effect savings in fuel proportional to the local difference between the price of coke and that of coal. A furnace specially constructed for this purpose has now become almost a necessity to large lead works.

A few remarks on the smelting of such ore mixtures as above described are here added.

Contrary to former custom, slags with greater percentages of lime are now preferred where large quantities of zinc are present. Of the approved slag types, the well known 1 : 1 slag, with 26% CaO, is often run when economical.

Large furnaces, 42 × 120 in. at the tuyeres, are now most in favor. They give large tonnage together with much space in the shaft for "hangings." A small (6-in.) bosh all around the furnace does not decrease the tonnage, and seems advisable, both as a means of introducing a back tuyere, which is sometimes of great assistance, and also to permit a more spacious shaft.

If, besides carrying the impurities named, the charge has not sufficient lead to insure good furnace work, bullion of the lowest possible grade should be fed back, to avoid larger losses caused by scattering, and necessary subsequent re-melting of high-grade scrap lead.

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* A paper read at the Baltimore meeting of the American Institute of Mining Engineers, February, 1892.

A NEW ELECTRIC MINING HOIST.

A new electrical mining hoist has been recently brought out by the General Electric Company. It is constructed with the object of obtaining a wide range of hoisting speed, to which end the controlling apparatus has been carefully perfected. The drum is of unusually large diameter and is connected by an intermediate gear to the armature shaft of a 25 kilowatt (30 H. P.) motor of the General Electric Company's regular bi-polar type. The controller for the motor, which is not shown in the cut, is similar to that used in street railway service, and is operated on a separate support conveniently within reach of the operator and directly to the right of the levers. These can then be operated with the left hand, and the controlling switch with the right. The series method of electrical control is adopted, the speed being increased or decreased to meet requirements by the movement of the switch handle. The hand brake is of the band type, lined with wood, and extends almost entirely round the drum. The drum is thrown into operation by a clutch operated by the second lever. The range of speed obtained on this hoist is very wide. It is designed to raise loads of 1,300 lbs. at a rate of 600 ft. a minute, and has successfully accomplished this. It can also raise loads 100 lbs. at a speed not exceeding 20 to 30 ft. a minute. The motor is erected on its own bed-plate bolted to the bed-plate of the hoist proper, the whole apparatus occupying comparatively little space owing to its compact construction.

VARIATIONS IN THE MILLING OF GOLD ORES.—III. CLUNES, VICTORIA.

Written for the Engineering and Mining Journal by T. A. Rickard.

(*Concluded from page* 78.)

We next come to the wells, which are cleaned up once per week. The mercury is squeezed through cloth and the excess of quicksilver separated from the amalgam. The skimmings taken from time to time from off the surface of the mercury in the wells, and consisting largely of heavy pyrites, are treated in Berdans,* of which there are three, each of 3 ft. in diameter. The blankets are washed in tubs, the first row every hour, the second every alternate hour, and the third every third hour. With rich ore the washing is done more frequently. The blanketings or residues from the washing of the blankets are treated in the amalgamating barrels in much the same manner as described in the case of the mortar box residues. The material collected by the "ties," straight troughs in which heavy pyrites, escaping amalgam, etc., collect by the action of gravity alone, is also treated in a barrel. The tailings from all the barrels go to certain of the buddles. The pyrites obtained from concentration on the buddles is roasted in a reverberatory, and then ground in a Chilian mill with the addition of mercury, which collects the gold in the form of amalgam.

The total yield of the mill is variously distributed. In one month 2,973 tons were crushed, yielding 981 oz. 19 dwts. 12 grs. of gold. Of this total the different parts of the mill contributed as follows:

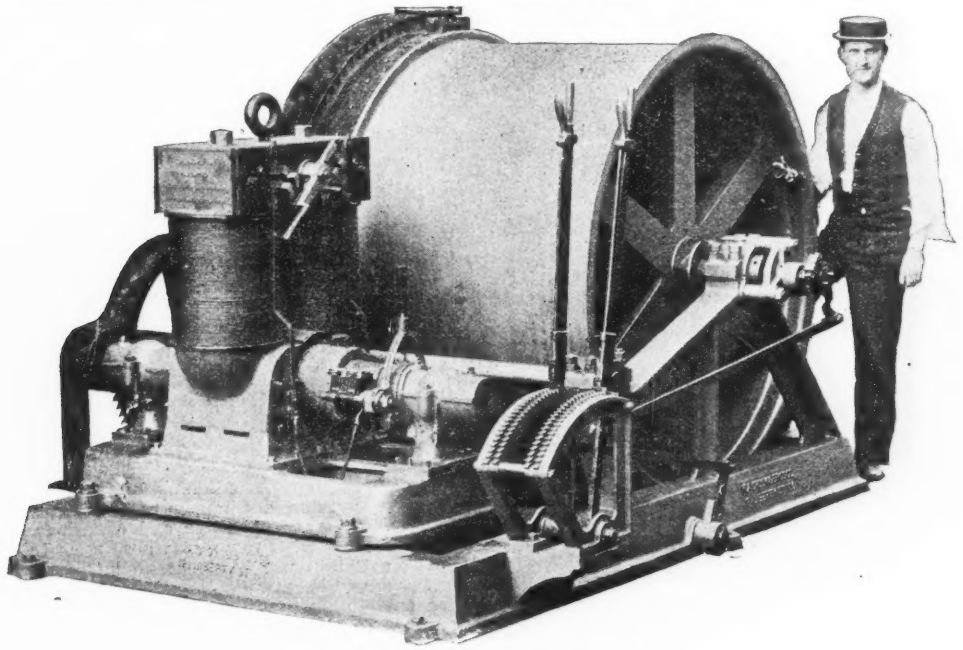
	Amalgam.	Bar gold.	Retort Percentage
Mortars (beds)	955 oz. 5 dwts,	840 oz. 19 dwts.	36 to 48%
Wells (boxes)	644 " 19 "		
Blankets (by the barrels)	364 " 15 "		
Skimmings (by the Berdans)	167 " 14 "	53 " 2 "	32%
Tailings (by ties and barrel)	24 " 10 "	7 " 5 "	30%
Concentrates (pyrites), 17 tons	310 " 4 "	80 " 13 "	26%

It will thus be seen that of the total amalgam saved in the mill itself (neglecting concentrates and tailings) the percentage is thus distributed: Mortar boxes, 44·8%; wells, 30·2%; blankets, 17·1%; skimmings, 7·9%. It must be remembered that in the case of the yield was £197 6s. 0d., and during that period 181,792 tons were crushed, or at the rate of 355 tons (397 short tons) during the life of a grating. It was found that the ordinary round punched Russia iron lasted scarce a week as against a month for this type of copper grating.

Baize is used for the blanket strakes. For one year the cost under this item amounted to £47 9s. 2d. During the same period the wages at the mill amounted to £1,306 4s. 9d. for the treatment of 28,820 tons of ore, or 10½d. (21c.) per ton. The total cost of milling, including supplies, wear and tear, treatment of pyrites, etc., amounted to 2s. 3d., or 54c. per ton of ore.

The Dixon's North Clunes Mill is very similar to that just described. A few minor differences may be noted. The first grating is of copper, 180 holes per square inch, while the back grating is of brass wire, 230 to 240 holes per square inch. In this mill there are six of Munday's patent buddles with iron scrapers, two to each 10-stamps. At the South Clunes United there are only five to the 60-stamps; not enough. Assays are made daily, and the tailings are found very clean. The pyrites is washed and then treated in a Chilian mill. Cost per ton, £1 16s. 11d. The roasting of 85 tons 1 cwt. cost £89 6s. 7d.; grinding, £67 15s. 11d., or a total cost of £157 2s. 6d. The furnace is a reverberatory, 40 ft. by 5 ft.

Returning to the examination of the figures given in the comparative table it will be noted that both the newer mills follow very closely upon the lines of the old Port Phillip. The weight of the stamps—8 cwt.—is that which is most usual in the Colonies. Of the three mills the South Clunes United is the only one without a rockbreaker, and the result is to be seen in the smaller crushing power. The Dixon's North Clunes used the finest grating, but in so far as this affects the rate of



A NEW ELECTRIC MINING HOIST.

* Small pans placed at an inclination in which the grinding is done by a ball which remains at the lower end and turns round as the pan revolves.

* Lead amalgam behaves similarly.

† That is, the front and back gratings together passed through 4,400 tons.

crushing it is fully compensated for by a less depth of discharge. The weight of the drop is practically the same in the three mills. Although the gold in the Dixon's is probably coarser than that in the ore treated at the South Clunes, the retort percentage is not quite so high because the finer size of grating used at the Dixon's produces finer crushing, and causes the amalgam to be somewhat more contaminated by pyrites. The large quantity of water consumed at all these mills is necessitated by the double discharge and the use of very wide blanket tables. The consumption of mercury is extremely low. The chief source of loss in a mill, that due to the flouring of the mercury by its violent agitation with the particles of the pulp when under the stamps, is here avoided, since none is put into the mortar box; 5½ grs. per ton is probably the smallest loss of mercury in a goldmill of which we have record.*

Before venturing to criticise the methods of gold extraction employed at the mills of this district it will be necessary to consider the character of the ores. These are broken from veins of quartz traversing slate and sandstone beds. When sent to the mill the quartz is accompanied by a comparatively small admixture of country rock. The quartz is white, often honey-combed, and sometimes sugary. The gold which it carries is coarse, of very high caratage, often visible to the naked eye, and arranged for the most part along the faces of small fractures and seams traversing the quartz. A blow tends to readily detach the gold from the quartz. Occasionally the quantity of "mullock" or waste rock increases considerably, and the gold is accompanied by pyrites, chiefly arsenical iron sulphides, or occurs in a matrix composed of quartz and slate intermixed.

Such, briefly, is the nature of the ore. The accompanying record † covering 14 years, will give a good idea of the completeness of the extraction and the proportion of the value saved by the several contrivances which together make up the treatment. It is taken from the mill book of the Port Phillip & Colonial Company.

THE PERCENTAGE OF GOLD OBTAINED.

	Beds.	Boxes.	Blankets.	Mills.	Blankets and mills.	Yield per ton.	
						Dwts.	Grains.
1865....	63·60	22·09	10·55	3·76	14·31	7	13¾
1866....	65·60	21·63	8·73	4·04	12·77	6	15
1867....	65·44	22·50	8·48	3·58	12·06	9	5
1868....	63·22	24·03	8·11	4·64	12·75	8	23
1869....	61·33	24·77	8·02	5·88	13·90	7	8
1870....	60·15	26·69	2·74	10·42	13·16	4	2¾
1871....	62·59	25·39	....	12·02	12·02	5	17
1872....	64·48	21·60	1·06	12·86	13·92	4	17¾
1873....	59·20	20·67	10·35	9·78	20·13	3	23½
1874....	56·14	22·54	13·24	8·18	21·32	4	1½
1875....	54·81	25·14	11·22	8·83	20·05	4	23¼
1876....	58·17	21·24	11·12	9·47	20·59	5	4
1877....	52·84	21·56	15·40	10·20	25·60	6	20¼
1878....	52·84	17·12	17·11	12·93	30·04	7	20¾
1879....	57·99	10·50	12·84	18·67	31·51	8	19¾

It will be noted that in 1870 the use of blankets was discontinued and during 1873 it was again resumed. During the interval, it will be remarked, the yield from the Chilian mills, which treated the concentrated pyrites, increased considerably. Looking down the first two columns it is seen that while the proportion of the total yield coming from the mortar boxes (or "beds") and wells (or "boxes") amounted to 87·03% from 1865 to 1868, it declined to an average of 73·08% for the last four years. In 1879 it was only 68·49%. In the meantime the yield from the blankets and concentrates (as shown by the product of the Chilian mills) increased correspondingly. The first two columns represent that part of the gold contents which is essentially "free," while the third and fourth columns represent the remaining portion which is less easily extracted or "refractory."

The explanation of the figures above referred to lies in the fact that the mine workings having become deeper, the ore, by the steady increase of the percentage of pyrites contained in it, had bcome less "free milling." On referring to the returns obtained from the pyrites this reasoning is confirmed, for while in 1866 the yield of concentrates amounted to 268 tons, averaging 2 oz. 19 dwts. 4 grs. from the crushing of 59,578 tons, in 1879 the pyrites amounted to 421 tons, averaging 4 oz. 15 dwts. 20 grs. resulting from the treatment of 56,766 tons.

To consider the methods in use: It will be allowed that in milling the use of costly chemicals is to be carefully avoided. Mercury is the one chemical most generally used. Since a large (55% to 65%) percentage of the gold in the ores treated at the Clunes mills can be arrested in the mortar boxes by the action of gravity alone, the practice of the district is altogether correct in so far as concerns the non-employment of mercury in the battery. When under the stamps, mercury is always subject to "flouring," that is, the breaking of it into minute globules which, collecting impurities, become covered with a film which causes them to refuse to coalesce, and so to be carried away upon the surface of the water. Together with the direct loss of mercury, there must always be also an indirect loss of gold, particles of which have entered into amalgamation with the escaping globules of mercury.

The absence of copper or other amalgamating plates is remarkable. This also, keeping in view the character of the ore, is correct. Wells are excellent gold-saving appliances for ore of this type, in which the precious metal is both free and coarse. They require less attention, their first cost is less than that of amalgamating plates and they are less affected by the occasional presence in the ore of minerals, which are injurious to amalgamation.

* The other record, that for extreme waste, is held by the Caledonia Mill, at the Thames No. 2, where it is stated that one ton of mercury was used up in two weeks by a mill of 20 heads only!

† The terms "beds," "boxes," "mills," correspond to "mortar boxes," "wells," "Chilean mills," respectively.

Blankets, when they are intelligently used, are also among the best of the simple contrivances known to the millman. Instead of having the bad arrangement, seen in so many mills, of giving them a width much less than that of the amalgamating tables of mortar boxes, which precede them, the blanket tables here have the full uninterrupted width of two batteries. At the South Clunes United there is a clear blanket space of 10½ ft.

Ordinarily, the slope of the blanket strakes or tables would be from 1¼ to 1½ in. per ft., but at Clunes, owing to the employment of a larger quantity of water* one is able to work them with an inclination of only ¾-in. per ft. This is in itself an important factor, though apt to be overlooked.

The after treatment in the barrels may appear crude, but practice has shown that it is very effective. The bad custom, observable in some California mills, of putting pieces of iron into the barrel (with the idea of mixing up the pulp and grinding it), does not prevail at Clunes. It is a device which serves mainly to cause excessive loss of mercury which, quite as much as the pulp, becomes ground, and so "floured."

The double discharge, front and back, presents no striking features. It is successful in increasing the crushing capacity of the mill, though it will be noted that it also requires the use of a much increased supply of water.

The depth of discharge is a factor in milling, the importance of which is almost invariably overlooked. The mills of this district are not guilty of the vicious practice of allowing a wide difference between the minimum and maximum depth of discharge, caused by the wearing down of the dies. An endeavor is made to keep the depth of discharge fairly constant, first by regulating the packing up and under the dies, and then by the placing below them (as they wear down) of a false bottom.

Though the self-feeders used are not automatically perfect, they do their work well, and, it is needless to add, are a great improvement upon the bad, irregular hand-feeding, which prevails in the majority of Colonial mills.

The concentrating machinery may, with reason, be considered somewhat out of date, but the modified Cornish buddles in use are doing most excellent work, and it is doubtful whether they would be replaced to advantage by the more costly Frue vanner.

Speaking generally, the treatment which the ore undergoes is remarkable, most of all on account of its simplicity, but so is the ore; and in this way the practice of the district carries out the first postulate of intelligent milling, viz.; that the treatment should be varied according to the character of the ore to be treated.

After a careful examination of the ore mined at Clunes, and of the milling to which it is subject, it is not possible but to speak in words of commendation. To a millman, Clunes is almost solitary among the gold mining districts of the Colonies, in being a quartz milling center which does not leave a feeling of dissatisfaction and an impresson of disappointment. The old Port Phillip is still working, but as a great mining and milling establishment, it is a thing of the past. That past has, however, been a glorious one, not so much by reason of the dividends which it has paid, but because of the successful experimental work which it carried on for so many years, at a time when such work was especially needed. The immense good it has done as an educational center and a trading ground for millmen is not known save to those acquainted with the work which was done at Clunes from 1857 to 1880. You may visit mills in the most distant part of Australia and almost without exception, wherever you find good, intelligent milling (and that does not happen too often to be monotonous) you will also learn that that knowledge and experience were obtained at the small Victorian mining town, of whose record we are speaking.

The Port Phillip was the first to introduce the system of taking daily assays as a check upon the work done in the mill. In this respect Clunes is still, unfortunately, a striking exception.†

In another department, this mill was almost a solitary pioneer. The rock breaker was introduced by the Port Phillip in 1865. Can it be believed that in these days of improved milling machinery, when the rock-breaker is accepted as an absolutely necessary portion of a complete mill equipment, that in the great gold mining colony of Victoria, there are only 12 rock-breakers! Of this number three are accounted for by Clunes, two belonging to the Port Phillip, and one to the Dixon's North Clunes.

In closing this short account of the milling practice of a district but little known beyond the Colonies, it will be pardoned if I express the opinion that the work done at the Port Phillip & Colonial Company's mill has been of more wide-reaching usefulness and more permanent benefit to the mining industry of Australia and New Zealand that that of any other company which has gone into operation since the days of the discovery of gold. I wish to record my conviction of the debt which quartz milling in the Colonies owes to the manager—Mr. R. H. Bland—of the Port Phillip, who started the operations in 1856, conducted the numerous and valuable experiments which did so much to establish the correct basis of milling practice, and to-day still assists the industry by his sterling good sense.

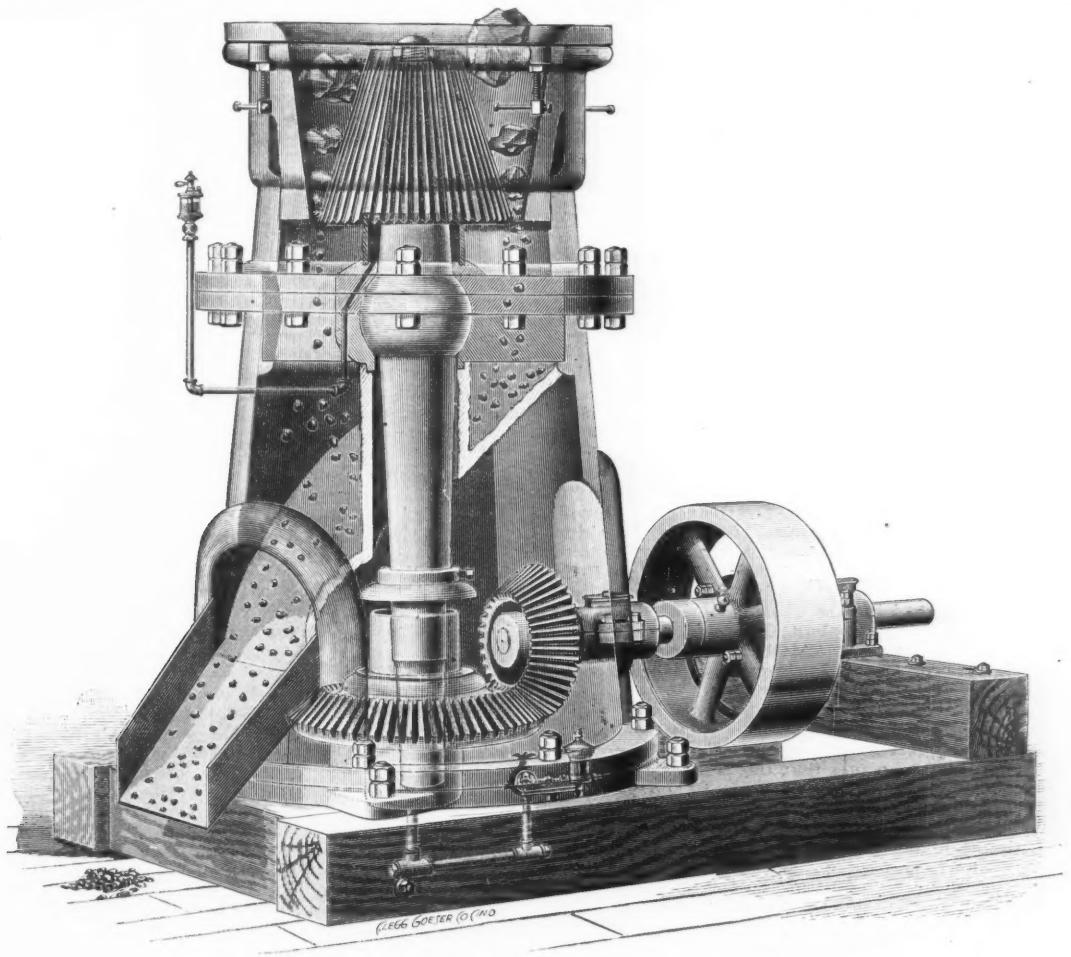
Foreign Marble for Government Buildings.—Complaints have been made by Tennessee and Georgia marble men that in the construction of the new Congressional Library building at Washington, D. C., the native marbles have been discriminated against in favor of the foreign marbles, and that of the native marble used Vermont furnished the bulk. The complaint is that $600,000 worth of foreign and only about $38,000 worth of native marble have been purchased. Representative Houk, of Tennessee, has had some correspondence on the subject with General Casey, who is in charge of the work on the library building, and it is probable that the General will find his conduct the object of a resolution providing for Congressional investigation, although he has written to Representative Houk denying any discrimination on his part.

* Due, as pointed out, to the use of the double discharge.

† I recollect another instance in Australia, the mill of the Harrietville Gold Mining Company, Ltd.

THE NATIONAL MACHINERY COMPANY'S ROCK AND ORE CRUSHER.

In our issue of December 5th, 1891, we described the rock and ore crusher brought out by the National Machinery Company, of Tiffin, O. Since that time several alterations and improvements have been introduced into the machine so that the latest form which we here illustrate presents some novelties. In this machine the crushing head is mounted on the top of a vertical rotary shaft, which is held in a ball and socket bearing and driven by bevel gearing below. The hopper is entirely open to permit the dumping of whole carloads of material directly into the machine. The belt is applied to the heavy cast iron band wheel which is attached to a brake hub by means of two common machine bolts. The brake hub is only keyed to the horizontal countershaft. Should the crushing head come in contact with anything of an unbreakable nature, the strain becomes so great at the pulley that the bolts would be stripped of their threads. To the countershaft is attached the pinion which drives the large gear at the bottom, and to this large gear is attached a brass eccentric bushing, the throw of which varies from ⅝ in. to 1¼ in., according to size of the machine. The lower end of the heavy upright shaft rests within this eccentric and gyrates with it. As the gear wheel and eccentric revolve the upright shaft will receive a gyratory motion. The chilled iron liner is fitted within the outer shell so that it may be raised or lowered by means of the jack screws on the outside of the machine. This will regulate the size of the product and also take up the wear on the head and liner. The crushing head has the greatest motion at the top and the least motion at the bottom. This movement produces a most uniform product. This crusher is adapted for fine crushing, as the crushing head can be set up very close to the inside liner or concave, there being very little motion at this point. The machines are made in nine sizes, giving a product ranging from 5 to 175 tons per hour.



THE NATIONAL MACHINERY COMPANY'S ROCK AND ORE CRUSHER.

The Government and the Nicaragua Canal.—The committee appointed by the New Orleans National Nicaragua Canal Convention has issued a historical letter in support of its position that the United States shall build the canal, own and control a majority of the stock and fix the tolls on the canal after completion. The letter shows that after the Mexican war President Polk negotiated through Judge Hise, of Kentucky, with Nicaragua for concessions for this canal. Later, during President Grant's administration, this concession was again taken up. Then during President Arthur's administration concessions were again made to the United States Government, but all these negotiations failed on account of diplomatic relations with England. The letter further shows that England's diplomacy has for more than 40 years delayed the construction by the United States of this canal; it shows that the only solution of this diplomatic difficulty is in the incorporation of a private company with the government as owner of over four-fifths of the stock, appointing or voting for 13 out of the 15 directors, and indorsing the bonds and controlling the building of the canal and the disbursements of the funds.

CONDITION OF THE MINING INDUSTRY IN 1892.

COLORADO.

Written for the Engineering and Mining Journal by Thomas R. MacMeechen.

The chief and most characteristic features of mining in Colorado during the year 1892 have been the remarkable activity in the silver and lead producing districts, despite the radical depression of silver; the enormous amount of capital, mostly from the East, which has been invested in new milling processes for reducing the cost of gold treatment; the direct influences of the several sessions of the Western Slope Congress upon the railroad and smelter questions and the important railway extensions into new mineral-bearing territory, materially increasing the state production, which has exceeded $36,000,000 in 1892. There has also been a noted shortage of lead flux, occasioned by the absorption of the Mexican lead ore by the smelters recently established in that country, and this created a brisk local demand for good lead properties. The ores of Mexico are now treated at the Mexican smelter instead of seeking, as formerly, United States reduction.

Among the more important gold and silver processes introduced in the past year, and which are now operated in low grade districts, are the Russell lixiviation, MacArthur-Forrest cyanide, the Luckenbach, a hydraulic process, the Meach or chlorine system, the Austin system of pyritic smelting, and the Bennett Amalgamating Company's electrical treatment. Each of these methods has undergone tests, and been pronounced more or less successful. The capital invested in them is said to exceed $5,000,000.

The main railway extensions have been those of the Rio Grande and Union Pacific into the Irwin coal district of Gunnison county, now under survey, the Colorado Midland into Cripple Creek, Rio Grande Southern into Rico, and various short branches of the Rio Grande and Union Pacific into the southern coal fields, most notably those of Las Animas county. Several new branches have also been projected into the northern coal fields, which will be placed under construction early this year.

The last Western Slope Congress, which convened at Durango last month, succeeded in the attainment of favorable railroad reductions in the ore freight rate to points in eastern Colorado, and has given assurances of the support of a very extensive smelting plant to be located at the most advantageous point for the mineral resources of that section, some time in 1893. Another reason for gratification during the year just past is the unusual interest taken by the new President of the Rio Grande Railway, Mr. E. T. Jeffrey, in the advancement of the state's mining industry.

The total capitalization of all the mining companies incorporated during the year in Colorado is about $417,700,000. They brought into the State treasury in fees, $39,039. From a statement issued by the Surveyor-General of Colorado, ranging from January 1st to the end of December, 1892, there were seven hundred and twenty-one orders for

surveys and fifteen hundred orders for lode locations. The survey orders cancelled were thirty-one, and the number of lode locations cancelled sixty, leaving a total of six hundred and ninety survey orders issued, and fourteen hundred and forty lode locations. During the same interval five hundred and fifty-six surveys and eleven hundred and fifty lodes were approved.

The assessed valuation on the gross output of mining properties for 1891 was $6,338,402, as against $7,118,223 for 1892. These figures were obtained from the Auditor of State. The number of carloads of ore shipped into Denver during the year was twenty-two thousand one hundred and twenty-nine, a monthly average of 1,844 cars, or 442,580 tons, as against 390,000 tons for 1891. These figures are from the records of the Merchants' Railway Bureau of Denver. The number of tons of ore shipped into Pueblo was about 290,000, and into Leadville about 190,000, while Durango received about 100,000 tons, showing a marked increase for this point over 1891.

The report of the State Labor Commissioner for 1891 and 1892 shows that there are now in operation 895 metalliferous producing mines in Colorado, employing 16,926 miners, who draw $14,265,000 in wages annually from the pay-rolls of these corporations. Daily earnings of miners in Colorado at this date range from $2.50 to $3.50 per day, being the same standard that has governed this class of labor for years. The increase in operation in the gold districts since the fall of the price of silver may be noted from the fact that Clear Creek and Gilpin counties which produce 60% of the gold yield in the state, together employ 3,465 miners, while Lake county and Aspen, constituting the heaviest silver producing district, employ 4,310. An advance statement of production statistics compiled by the State Labor Commissioner from material furnished him by the mining properties numbered in his report gives an estimate for 1892 of $4,818,700 in gold, $25,300,000 in silver, $600,000 in copper and $5,600,000 in lead, giving a total of $36,318,700; this estimate, however, is shown to be over four millions too high, when compared with figures obtained by the Denver "Republican."

The excessive production of metalliferous ore in the state and the unusually large importations from outside sources have been due to increased capacity in existing plants, and have also necessitated the erection of a number of new reduction works. The Boston & Colorado Smelting Company filed during the year new capitalization papers for $1,500,000, to cover additions to their already large plant at Denver. The most notable and extensive addition, however, made by any smelting plant in the state, or for that matter in the entire country, was that of the Omaha & Grant Smelting and Refining Company, which will cost when completed over $1,000,000.

Among the new smelting companies incorporated are the National Reduction Works at Pueblo, $1,000,000 capital; the Boulder Reduction Company, $100,000; the Hardinge Smelting Company, of Aspen, $500,000; the Holden Smelting and Refining Company, of Aspen, $1,000,000; the Bi-Metallic Smelting Company, of Leadville, $500,000; the Cripple Creek Gold and Extraction Power Company, $250,000; the Denver and Golden Smelting Company, $100,000; Amalgamating, Chemical and Electrical Reduction Company, of Denver, $500,000; the Standard Smelting and Refining Company, of Durango, $500,000; the Cripple Creek Reduction Company, $500,000; the Aspen Mining and Reduction Company, $2,000,000, and the Pike's Peak Sampling and Ore Reduction Company, of Cripple Creek, $500,000.

Two incorporations of 1892 marking the opening of new lines of industry are those of the American Asphalt Company, capitalized at $1,000,000, an aluminum company, at $2,000,000. Asphalt in large bodies has been discovered near Grand Junction, and several corporations have been formed lately to handle this product.

The petroleum production of the Florence oil fields will show a slight increase over that of the previous season. There is, however, no radical change in this output year after year. The only matter of interest in connection with it is the fact that the petroleum residuum, formerly wasted, is now utilized for fuel purposes in the mines and smelting furnaces of Leadville and Aspen. The annual production of oil in this section attained this year a total of between 650,000 and 700,000 barrels, distributed about as follows: Crude oil, 300,000 barrels; refined oil, 140,000 barrels; greases, 160,000 barrels; the highest yield of a single well per diem being about 200 barrels.

The sandstone output has become one of Colorado's chief industries, and during the past year the quarries have turned out over $2,000,000 worth of this building material. There are now in the state 71 quarries, employing 1,521 men, and the marble, granite and onyx quarries have received more attention during the past year than at any previous time in their history. The brick-clay and kaolin beds have also been largely developed.

The capacity of the Bessemer Steel Works, at Pueblo, has attained a combined iron and steel annual output of between 53,000 and 54,000 tons, giving it the distinction of one of the greatest plants of its kind in the world. Its output may be itemized as follows:

Pig iron, 25,000 tons; steel rails, 16,000 tons; iron castings, 1,300 tons; cast iron pipe, 1,200 tons; merchant bar, etc., 4,700 tons; nails (100-lb. kegs, 45,000), 2,250 tons; spikes, 2,500 tons.

During 1892 there have been 77 producing coal mines, and while their total output for 1891 was 3,358,496 tons, valued at $10,075,448, the output for 1892, as near as can be ascertained at this writing, will be 3,927,000 tons, worth, at the market price, $12,959,100. This valuation is based on an average of $3.30 per ton. There are now 140,933 acres of coal lands operated in the state, the combined area of all coal territory covering 18,100 square miles, which exceeds that of Pennsylvania by nearly 50%. At present there are 8,164 people deriving a livelihood from this industry, and the wages disbursed among them averages $5,905,159, according to figures based on estimates obtained from employers and employees. Instances of the increased amount of capital placed in the coal industry during the past year are the consolidation of the two greatest coal and iron corporations in the West—the Colorado Fuel Company, and the Colorado Coal and Iron Company—under the title of the Colorado Fuel and Iron Company, with a capitalization of $13,000,000; and the incorporation of an immense "trust" combining all of the coal interests of northern Colorado, under the title of the United Coal Company, whose lands covers over 3,045 acres, and contain 50,000,000 tons of coal. The latter concern estimates its output for 1892 at 500,000 tons. During 1891 and 1892 about 7,000 acres of coal lands were purchased from the government in one county alone, La Plata, at $20 per acre, and improved by costly machinery. The coal analysis of all districts shows the Colorado product to be equal, and in many respects superior, to that of Pennsylvania. The State Inspector of Coal Mines says in a quite recent report: "The increase in population throughout Colorado, Kansas and Nebraska points out a great future market for northern Colorado coals, for owing to their location geographically, they can be offered at a much lower price than the coal from southern Colorado fields, and judging from the geological research, which has fully demonstrated beyond all reasonable doubt the extreme scarcity of coal beds throughout Nebraska and Kansas makes it evident that they must ever look to Colorado for their fuel supply." Furthermore, in connection with the southern coal fields, he speaks of the entire absence of coal in Texas and the barrenness of the wood fuel supply, together with the demand of the increased ocean steamship travel whose ports are upon the gulf boundary of the state, and says that this entire territory must henceforth rely upon the adjacent coal fields of southern Colorado for an immediate and ample supply of coal. The year just past is a remarkable one in the history of the coal industry in this state, from the fact that more capital has been put into the development of the fields, and more modern machinery has been introduced with which to handle the great demand, than at any previous time since the beginning of its history.

Reverting to the metalliferous producing districts, Leadville of course heads the list, with its almost unvarying annual output. All of the paying properties at this point during 1892, including the A. Y. and Minnie, Colonel Sellers, Henriette, Maid of Erin, Louisville and other large and familiar groups, have either only departed slightly in part from their customary production or increased it by several thousands of tons.

Aspen's production is thought to have exceeded that of 1891 by a very pronounced amount, notwithstanding that it is essentially a lead and silver camp, and that there has been a heavy falling off in the market price of the white metal. The fame of the Mollie Gibson is now world-wide. Its improved plant is sufficient to sink over 2,000 ft. on the contact, while the average value of its production has remained close to 600 oz. of silver to the ton. One car of 23½ tons during the past year gave $44,000 net; one car of 22 tons, $60,000 net; one car of 24 tons, $76,500 net; one car of 22 tons, gave $60,400 net; one car of 28 tons, $64,100 net. Five sacks, averaging 112 lbs. to the sack, returned $5,670, and at another time the same amount returned $4,260 net. Nearly all of this ore has been handled at the Omaha & Grant Smelter by contract. The Holden Smelting Company, a recent enterprise in Pitkin County, is the first corporation to introduce a new treatment of much importance for the low grade ores in this vicinity. Its plant cost in the neighborhood of $300,000, and the exclusive right for this territory, of treating ores by the Russell process of lixiviation, is its privilege. The Aspen Mine has been working mainly on new ore bodies at the lowest levels, and leaving their reserves until some fixed price for silver is made. The famous consolidation of the Della S. and the J. C. Johnson, which followed the litigation between these two companies in the United States Court early in 1892, has been the means of bringing about a development on Smuggler Mountain far exceeding that of any previous year. The plants of the consolidation have been augmented until the combined power is now sufficient to sink to a depth of 2,000 or 3,000 ft. on the vein. The gross tonnage output of this property will be enormous when its accurate total has been set forth. The Mollie Gibson, on the same hill with the Della S., has made the production of the Smuggler Mine vie with the hitherto unapproachable output of Aspen Mountain on the other side of the hill.

At Creede the development has been slow but steady, and the camp has now taken its rank as fourth in production in the State. The Last Chance filed new incorporation papers a few months ago, naming as its capital $5,000,000, and the Delmont duplicated this. The Amethyst, New York, Little Maid and other well known producers have held their own during the year.

From January 1st to ovember 1st, last year, Rico had shipped a total of 12,830 tons, a production at the rate of 15,396 tons for twelve months, and the value of this output, which is of a grade lower than that of the previous year, is $2,000,000 against $1,250,000 for 1891. A small sampling works was erected here early during the past year, and the most sanguine of its citizens predict the establishment of a smelter at or near the town sometime during the first part of the new year.

Continued tests in Gilpin County show an average in gold mill retorts and bullion assays of about 787 parts gold, 198 silver and 15 copper, emphasizing its claim of producing 60% of the gold yield in Colorado. There are now 510 stamps crushing ore in this district. The combined smelting and milling output for 1892 is estimated to have certainly exceeded $3,000,000. Russell Gulch and Yankee Hill have furnished the surprises of the year in that section, and Juniter-Belmont, at the former, and the Alice at the latter, have accomplished perhaps the most noteworthy development.

Ouray properties have also accomplished a great deal of development work, particularly in the Red Mountain district, where the American Girl and Guston are still large shippers, while the Robinson, Silver Belle and the Saratoga on Round Mountain continue to pay. Virginius is now operated altogether by an electric plant located ten miles from the mine, but the American Nettie still leads the district with its enormous production.

Cripple Creek, the new gold camp, is still a puzzle to mining operators as far as its geological structure is concerned. They are aware, however, that the "rock" impregnated with the yellow metal is there, and they are still industriously "quarrying" it out. The production of the

camp up to January 1st, 1893, is placed at about $1,200,000 to $1,500,000. Copper Rock properties have not been worked as heavily as the indications warrant, although the gold yield of that camp for 1892 will prove a surprise to many of those who have been incredulous.

The San Juan country has preserved its reputation for heavy output during 1892. The mines in the Sheridan Basin, notably the Sheridan-Mendota, have produced 400 to 500 tons per week, and the Smuggler-Union about the same amount, which product has averaged $50 in gold and silver. The Belmont group has output some 50 tons gold ore daily, valued at $10, while the mines and mills of the San Miguel Consolidated have helped to make the total for 1892 between $2,500,000 and $3,000,000. The Sheridan company has just completed a system of inclines for the delivery of its ores at the end of the railway. The Smuggler has put in a Bleichert aerial tramway 500 ft. in length, and having a capacity of 750 tons every 24 hours. The San Miguel Consolidated has introduced an electric plant system, consisting of a dynamo of 750 H. P., communicating from its location over seven miles to the point where the power is used. It is intended to drive two or three mills aggregating 300 stamps, which means a capacity of 600 tons daily. The principal advancement in the San Juan country for 1892 has been among the gold leads, a large number of which have warranted continuous operation. At Ophir, 15 miles from Telluride, there has been considerable activity in gold mining. These veins average $45 per ton and have during 1892 given a yield that will surprise the redoubtable Gilpin county.

Among the mining companies incorporated during 1892 which have played an extraordinary role in the history of the year are the Rico-Aspen Consolidated, Consolidated Rico-Return, the Enterprise, Union Carbonate and Atlantic Cable Consolidated Mining Company, at Rico; the New York Chance Consolidated, at Creede, with a capital of $1,000,000; the Anaconda Gold Mining Company, at Cripple Creek, whose capitalization is $5,000,000, and a long list of corporations at other camps.

Boulder and Las Animas counties now lead in the number of producing mines, the former having 18 and the latter 10. This relates only to metalliferous mines.

In conclusion it only becomes necessary to say that the product of Colorado for the past year, in the face of numerous financial adverses, has been very gratifying to the people of this State.

An Underground Railroad for Brussels.—It is proposed to build an underground railroad in Brussels in the form of a belt line with 11 stations. Electricity will be used for driving purposes. Each train will consist of one car on four-wheel trucks, and will be driven by a motor on one of the trucks. The traffic will be regulated by the automatic electric block system adopted on the Liverpool overhead railroad. The engineer is Mr. J. H. Greathead, London.

ELECTRICAL FORGING MACHINE FOR ROUND SHAPES.

The machine here illustrated is claimed to be the first successful machine ever put on the market for forging round shapes. It is made by the Electrical Forging Company, of Boston. The machine is designed and built for rapid and accurate work. It is rotary in all its movements, and thus no time or power is lost in the return of the dies to their working position. It may be worked at any speed, from slow to fast, according to the nature of the work required. It is quickly and easily adjusted and automatic in all parts. Articles from ½ in. up to 6 in. long, and from ½ to 1 in. in diameter can be turned out by the machinery shown in the illustration. The machines are built in ten sizes.

A great variety of things now produced are made of iron or steel of low carbon in order that they may be turned out economically. By this machine, however, highly carbonized steel may be worked equally as well as iron or soft steel. It is within the range of these machines to roll successfully steel of the highest grade of crucible down to the open-hearth and Bessemer. Copper and brass are also successfully worked.

By the electrical rolling process 100 perfect handles can be made in the time required to make one by former methods. Anti-friction steel balls from ⅛ up to 2 in. in diameter are made by the electrical-rolled forging process at a speed unapproached by other methods.

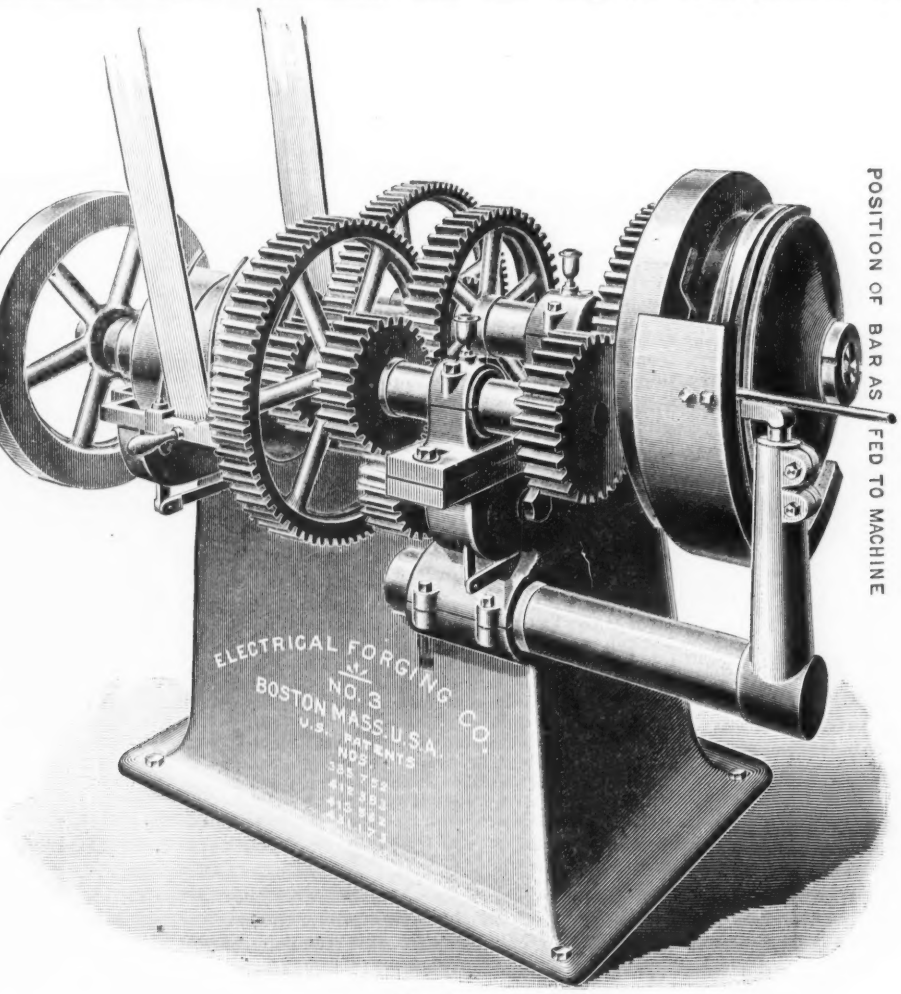


FIG. 1.

ELECTRICAL FORGING MACHINE FOR ROUND SHAPES.

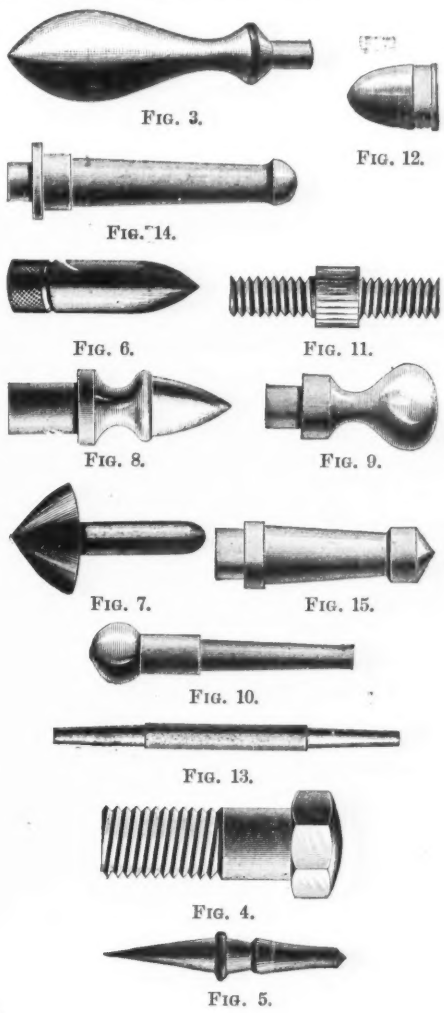


FIG. 3. FIG. 12. FIG. 14. FIG. 6. FIG. 11. FIG. 8. FIG. 9. FIG. 7. FIG. 15. FIG. 10. FIG. 13. FIG. 4. FIG. 5.

A red hot steel bar is inserted between the revolving dies (the position of the steel bar is shown in the cut of the machine), and for every revolution of the dies a ball is forged, or a conical shot, a chair screw, a bolt with thread and head complete, a boiler rivet, calks for lumbermen's shoes, or a spindle or taper pin may be produced.

The other illustrations show a few of the many samples of work made on this improved rolling machine. Fig. 2 is an electrically heated and rolled forged steel ball; Fig. 3, a rolled forged machine handle made in several shapes and sizes; Fig. 4, rolled forged hexagon head bolt, head and thread made at one operation, square and round headed bolts made by the same dies complete at one operation; Fig. 5, shoe calk, made in four sizes; Fig. 6, conical shell; Fig. 7, shuttle tip; Figs. 8 and 9, hinge tips; Fig. 10, hames start, made in several sizes; Fig. 11, right and left hand thread, made at one operation; Fig. 12, rolled steel cane and umbrella tips; Fig. 13, rolled bicycle spindles, all sizes; Figs. 14 and 15, rolled caster pins.

Sooysmith's pneumatic system of making foundations is to be applied in the erection of the high building of the Manhattan Life Insurance Company, at 64 Broadway, New York. This building is to cover 67 ft. by 120 ft. and it will be 16 stories high. The foundations will be in fine running sand, saturated with water, 50 ft. deep to rock. Sixteen steel caissons will be used, and each will support two to four pillars which in turn will support the building.

CONDITION OF THE MINING INDUSTRY IN 1892.

ARKANSAS.

Written for the Engineering and Mining Journal.

Zinc: There has been unusual activity in the zinc regions of Marion, Boone and Searcy counties. Development work is being carried on at a number of mines, and ore is being taken out for shipment. At the Morning Star Mine mining is being carried on and the ore hauled to the White River, from which point it will be transported by water; 350 tons, spot value, $20.50 per ton, is on the river bank at Buffalo City. Lack of transportation has prevented shipments being made from many mines in this locality.

Iron: No iron ore has been mined in this State since 1860, at which time there were two bloomery forges in operation. Deposits of ore occur in Lawrence, Sharp, Pulaski and Saline counties.

Copper: The Tomahawk Mine in Searcy County (P. O. Tomahawk) has produced a total of 150 tons of ore averaging about 36% copper, none of which has been shipped. Work has been suspended for the last fifteen months and will probably not be resumed until facilities for transportation are obtained.

Antimony: The principal antimony mines in Sevier County are known as follows: The Stewart lode, May Shaft, Valley, Bluff and Otto mines. The ore is stibnite of remarkable purity. The only operations of recent date have been carried on by the United States Antimony Company. A small smelter has been erected, but no shipments have been made during the year.

Gold: At the present writing there is no well authenticated account of the discovery of gold having been made in this State, although a great deal of prospecting has been done.

Some of the Bear City (Montgomery County) companies are still at work experimenting, and have succeeded in disposing of some of their stock during the year.

Silver: The Kellogg Mines, ten miles north of Little Rock, are now being worked. The minerals mined are galena, zinc-blende, gray copper and chalcopyrite, all of which are argentiferous.

Shipments for the year are as follows: One car (13 tons) zinc-blende, value at mine, $22 per ton; two cars (40 tons) lead silver ore, shipped to Joplin, Mo., for concentration, gave 37 2-10% of concentration which yielded 11·8% lead, 25·4% zinc, and 32·4% oz. of silver.

This property has been worked at intervals since 1848. During this time the value of the total output has probably been sufficient to pay all the legitimate costs of mining the ore.

A diamond drill has been purchased by the company and will be put to work during the month of January, 1893.

There is considerable activity in the Silver City mining district. Work has been resumed during the year and some ore has been taken out.

Coal: There has been a marked increase in the output of coal during the year 1892, the output for this year reaching 739,300 short tons.

The largest operations are carried on at "Jenny Lind," by the Western Coal and Mining Company, and at Huntington by the Kansas & Texas Coal Company. These two companies have investments in land and plants estimated to be worth upward of one and one-half million dollars value.

The Kansas & Texas Coal Company have recently put in a plant for the manufacture of "eggette," which is made by mixing the coal slack with asphalt, and pressing it into convenient sizes for fuel. The capacity of the "eggette" plant is 200 tons per day.

The Western Coal and Mining Company have purchased 5,000 acres of coal lands near Altus, in Franklin County, and are now opening up mines.

All coal mines in the State that work on an extensive scale are well equipped with machinery for mining. The plant of Stilwell & Co. and the Ouita Coal Company include machinery for washing and grading.

A very superior quality of coke has recently been made from the slack of Jenny Lind coal at Fort Smith, by Mehlburger Bros., who use it for foundry purposes.

PRODUCTION BY MINES AND COMPANIES IN 1892 AND VALUES.

Counties and collieries.	Operators.	Total production in short tons.	Total value.
Sebastian County:			
Huntington mines	Kansas & Texas Coal Company	293,000	
Jenny Lind	Western Coal and Mining Company	245,000	
Greenwood	Greenwood Coal Company	13,000	
Greenwood	Southwestern Coal Company	13,000	
Petty Slope	E. B. Petty	10,500	
Massard Prairie and other openings	Thompson, Degan and others	2,100	
Total Sebastian County (av. price, f. o. b. mines, $1.90 per ton)		576,609	$92?,560
Johnson County:			
Allister Slope	Ouita Coal Company	48,000	
Coal Hill Shaft	Stiewell & Co.	75,000	
Eureka Shaft	Stiewell & Co.	15,000	
Felker Shaft	Black Diamond Company.	3,000	
Philpott Shaft	L. S. Philpott	1,200	
Total Johnson County (av. price, f. o. b. mines, $1.75 per ton)		142,200	248,850
Pope County:			
Ouita Slope	Ouita Coal Company.	16,500	
Shin and other openings		1,500	
Total Pope County (av price, f. o. b. mines, $2 per ton)		18,000	306,000
About 40 small openings in different counties		2,500	5,090
Grand Total		739,300	$1,212,000

Building Stones: Granite occurs in the counties of Pulaski, Saline and Hot Springs. Although the stone is much sought for as a building and paving material; the quarrying industry has now fully developed. The output for the year of the quarries of Pulaski county will not exceed $85,000.

Sandstone: Large quantities of sandstone for building purposes are shipped from Cabin Creek, Johnson County. Expensive deposits of marble occur in Searcy, Marion and Newton counties, but owing to lack of transportation they are not quarried. Slate suitable for roofing and tile is found in Pulaski, Saline and Garland counties.

Manganese: The output of manganese ore for the year amounts to 7,060 tons, all of which is from the Batesville (Independence County) region.

Large deposits of kaolin of good quality occur in the counties of Pulaski and Saline. No attempt has been made to utilize the clay. Pottery of good quality is manufactured at Texarkana, Benton and other points on the St. L., I. M. & S. R. R. from clays in the vicinity of the works. Vitrified brick of superior quality are manufactured from shale at Fort Smith. The output for the year has been nine millions.

Various Products: Lime is burned in large quantities in the counties of Independence and Crawford. The total output for the year of Dennie's kilns in Independence County amounts to 22,000 barrels.

"Fullers Earth:" "Fullers earth" is prepared and shipped from Alexander. The total output for the year amounts to 300 tons. The demand is principally confined to refiners of cottonseed oil.

Considerable lignite of good quality is taken out in Ouachita County near Camden, and at Lester on the Camden branch of the St. L., I. M. & S. R. R. It is used locally as a fuel. Deposits of novaculite occur in Garland County near Hot Springs. The most reliable estimates placed the output of finished stones at 15,000 lbs. per year; value, $1 per pound.

The following table shows the value of the mineral production for 1892:

Silver	$400.00
Lead	50.00
Zinc	5,000.00
Coal	1,212,410.00
Building stone	95,000.00
Lime	20,000.00
Mineral water	5,000.00
Manganese ore	53,720.00
Novaculite (finished stone)	15,000.00
Mineral specimens and quartz crystal	12,000.00
Estimated value of unclassified products	4,300.00
Total	$1,422,880.00

Saniter's Process for Desulphurizing Iron and Steel.—In our issue of December 10th we gave a full account of the new process discovered by Mr. E. H. Saniter, of Wigan, England, for desulphurizing iron and steel by mixing a certain proportion of lime and calcium chloride to the molten pig. Further information has been given by Mr. Saniter in a paper read toward the end of December before the Cleveland Institute of Engineers, England. From this paper we gather that the new process has been tried by leading metallurgists in England since its first announcement, and that the claims put forward by its inventor have in all cases been substantiated. Also, additional details of the process are given. If it is desired to remove the sulphur alone without touching the silicon the calcium chloride must be dried before being mixed with the lime, whereas, if it is desired to remove the silicon as well as the sulphur, the calcium chloride must be used wet. About 25 lbs. of calcium chloride and 25 lbs. of lime are required to treat a ton of iron, and the cost of these materials is 12 cents per ton of iron. Mr. Saniter gives examples of working where the poorest qualities of pig have been used in producing steel of excellent quality, and he states that he has produced wrought iron equal in quality to Swedish iron at much less cost.

The Hall Aluminum Patents.—A decision was entered upon the record of the United States Circuit Court of Ohio, January 11th, 1893, in favor of the Pittsburg Reduction Company, controlling the Hall patents. The suit was brought by the company against the Cowles Electric Smelting and Aluminum Company on the Hall electrolytic process patents for the production of pure aluminum, and the plaintiff's case was sustained on every point. The final argument was heard by Judges Ricks and Taft, the former of Cleveland, the latter of Cincinnati. An opinion prepared by Judge Taft will be filed by the 20th inst. This decision is said to give to the Pittsburgh Reduction Company practicallly a monopoly of the pure aluminum business of this country. The attorneys for the Pittsburg Reduction Company were George H. Christy and Thomas W. Bakewell, of Pittsburg, and the chief expert witnesses on their side were Prof. Charles F. Chandler, of Columbia College, Prof. John W. Langley, of the Case School of Applied Sciences of Cleveland, and Dr. Rossiter W. Raymond, expert metallurgist and chemist of New York, and Charles M. Hall, the inventor of the process. The Hall electrolytic process is the only process employed to-day for the manufacture of aluminum in this country or abroad. By it the prices of pure aluminum have been reduced from $15 per lb. down to 50 cents per lb., at which price it is bulk for bulk, about as cheap as copper and cheaper than nickel or tin. By this process working on a large scale it is estimated that the cost of making pure aluminum can be brought down to perhaps 17 cents a pound. The process consists in reducing the oxide of aluminum by dissolving it in a fused bath, consisting of a fluoride of aluminum together with a fluoride of some other metal more electropositive than aluminum, and precipitating the metallic aluminum from this ore by electrolysis. The fused fluoride bath referred to remains practically constant, and therefore costs but little. The ore is simply dumped into this bath, and upon dissolving the metal is immediately electrolyzed out by the current at the negative pole, and falls to the bottom of the pots. The pots are then either tapped or ladeled out without disturbing the operation of the process, which is therefore continuous, and the purity of the metal thus obtained is higher than has ever been attained by any other process.

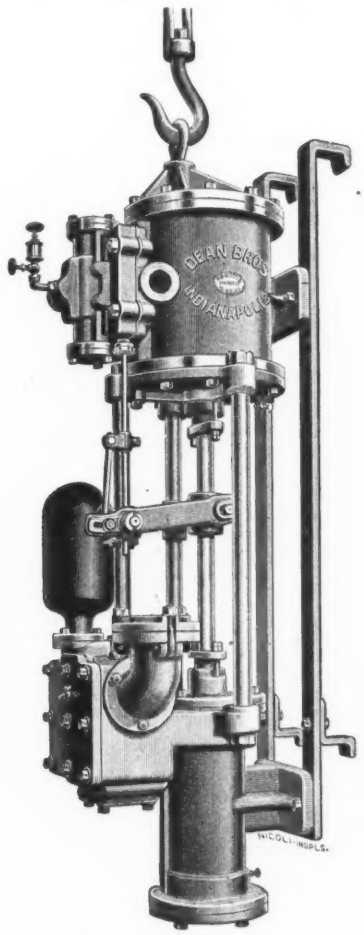
The consumption of aluminum is increasing rapidly and it will soon take a position in the metal world quite as important as that of copper, tin or lead. The Hall process and that of Heroult, whose large works are now running at Neuhausen on the Rhine, in Switzerland, are identical. Both Heroult and Hall applied for patents in the United States Patent Office about the same time in 1886, and after an interference suit, which lasted a year, Hall was judged the prior inventor. This same question of priority was of course one of the points at issue in the present case which was again decided in Hall's favor. The Cowles Electric Smelting and Aluminum Company abandoned their electric smelting process for making aluminum alloys when they commenced using the Hall method two years ago. The Cowles company can carry the suit up to the new Supreme Court for the hearing of patent cases only, and this, we understand, will be done.

DEAN BROTHERS' MINING PUMP.

We here illustrate a new mining pump made by the Dean Brothers Steam Pump Works, Indianapolis, Ind. The pump is intended for use in mines, shafts, wells, etc., and can be operated either while suspended from a hoist or while attached to the side of the shaft. It is fitted with Dean Brothers, noiseless valve gear with adjustable stroke. All the parts are made strong to resist rough usage and the water cylinder can be made of gun metal or bronze if the mine water is corrosive on steel. This form of pump is made in a great number of sizes. That shown in the illustration has a steam cylinder 14 in. in diameter and a water cylinder 8 in. in diameter with a common stroke of 12 in.; the suction is 6 in. and discharge 5 in. wide.

BATES' NUMBERING HAND STAMP

The Bates Manufacturing Company, of this city, are bringing out the improved form of numbering hand stamp shown in the accompanying illustration. It is entirely automatic, and will stamp numbers from 1 to 999,999. The impression is given by figures cut in the steel face of a series of six discs, and the ink is supplied by a pad ordinarily underneath the figures. By moving the index finger the numbering can be made consecutive, or two impressions can be made for each number, or the same number may be repeated indefinitely. All the motions between stampings are entirely automatic, so that the stamp can be used by one of small intelligence without a mistake being made in the numbers. The weight of the stamp does not exceed 1 lb., and the price is low.



DEAN SINKING PUMP.

BATES' HAND STAMP.

COPPER MINES AND WORKS IN THE CAUCASUS, RUSSIA.

In our issue of January 7th we published a translation of portion of an article by M. Weiss, in the "Annales des Mines" on Copper Smelting in Russia. We only dealt then with the Bogoslovsk works in the Ural Mountains, as those works are the most successful of any in Russia. M. Weiss's article also treats of the works at Tagilsk in the Ural Mountains and those at Kedabek in the Caucasus. The Tagilsk works are owned by Prince Demidoff, but they are of less importance now than formerly, as the production of copper in 1890 was only 700 tons as compared with 3,305 tons in 1852. The only point of interest here is the Herreshoff water jacket, with movable forehearth, which was introduced in 1888. The arrangement has not been a success, as it has been found difficult to prevent the water-cooled joint between the furnace and receiver from enlarging by corrosion. In 1891 the Hunt & Douglas process of extraction by sulphate of iron and salt was introduced, to treat the poorer ores that cannot be smelted. The ores smelted at these works are mixed oxides, carbonates and sulphides, and contain only 2·4% of copper, but they make up for their poorness by the great purity of the copper obtained from them.

The Caucasus mountains contain a great many deposits of copper ore, but the mountainous nature of the ground and the absence of fuel have made it impossible to work the greater number of those that have been discovered up to the present time. During the year 1888 the total production of copper in the Caucasus was 1,500 tons from 10 works, of which 1,113 tons were produced at the two works of Kedabek and Kalakent, belonging to Siemens Brothers. The average yield of all the mines has been 5·7% to 12% of copper. The mines and works of Kedabek are 33 miles south of Dalliar on the Tiflis & Baku Railroad, and are connected with that station by a road which rises 4,000 ft. in the 33 miles. There is no fuel in the neighborhood, and so crude naphtha is obtained from Baku and wood and charcoal from Kalakent, which is 14 miles away and connected with Kedabek by a narrow gauge railroad. The naphtha is brought by railroad to Dalliar, from whence it is pumped up through Mannesmann tubes, to near the works. The naphtha is cheaper than the charcoal and the supply is also greater; besides it has a much greater heating power weight for weight.

The total yield of the Kedabek mine during 1890 was 30,769 tons, of which 21,373 tons were available for smelting. Most of the ore is treated on the spot, but part of it is sent to Kalakent as return freight on the charcoal trains. The ore may be classified into three main divisions: The first consists of irregular masses of chalcopyrite containing 15 to 24% copper with about 5% of barite and 7% of blende. The second class is very friable and mostly in the form of sand; it contains from 5 to 12% of copper, some blende, barite and a considerable quantity of iron pyrite. The third class includes all the ore that contains less than 5%.

The third class of ores, containing from 2½ to 5%, are separated into two grades of large and small pieces. The larger pieces are burnt in heaps and the smaller in four Gerstenhofer calciners. The gases from the calciners are absorbed in water and the resulting acid solution is passed through the roasted ores which are arranged in heaps on an asphalt floor. The solution then passes to wooden tanks containing scrap iron. The precipitated copper is taken out from time to time and sent to the smelters. The consumption of scrap iron is 1·2 ton to 1 ton of 60% precipitate, and about 110 tons of pure copper is obtained every year from this source.

The smelting operations are comparatively simple on account of the purity of the ore. The large pieces of ore are calcined in kilns and the smaller in Gerstenhofer calciners heated with naphtha. The roasted ores are then fed gradually into a large circular furnace through a long inclined flue through which the hot gases of the furnace escape. About 38 tons of 7% ore mixed with 2 tons of iron ore as a flux are melted in 24 hours with a consumption of 4 tons of naphtha. The copper matte resulting contains 23% of copper, and the slag contains 50% of silica and 0·25% copper. The furnace has a dome roof and is heated by the flames of two naphtha burners. The flames pass over the metal in a horseshoe shape, and heat it by radiation and not by direct contact. Some of the ores are treated in charcoal furnaces, but when the pipe line is in full operation charcoal will cease to be used as a fuel. The refining furnace is fired by naphtha and consumes 24 cwt. for eight tons of blister copper refined in 24 hours.

At the Kalakent works the first and second grades of ore are at present smelted in low blast furnaces and the low grade is electrolyzed. The low grade ores are first ground in a Carr disintegrator and roasted in a Gerstenhofer calciner. The roasted ore is washed with clean water in wooden vats to remove the copper sulphate. The solution is then acidulated and passed to the electrolytic baths. The anodes are of blister copper and the cathodes of thin sheets of pure copper. During 1890 the production of the vats was 81 tons of pure copper. The current used was 400 amperes at 20 volts. The new Siemens process, described in our issue of April 16th, 1892, is at present being introduced at Kalakent and Kedabek.

DECISIONS OF THE DEPARTMENT OF THE INTERIOR AFFECTING THE MINING INDUSTRY.

MINING CLAIM—*bona-fides*—DISCOVERY-LOCATION.

1. A discovery of mineral must be treated as an entirety, and the proper basis of but *one* location, and, therefore, not susceptible of sub-division for the purpose of two locations having a common end-line that bisects the discovery-shaft.

2. Good faith is required of those who locate lands for minerals and make entry thereof, and no valid location can be made unless there has been an actual discovery.

3. The mining law evidently contemplates that the discoverer shall have the right to locate his claim to the exclusion of others, and if the discovery is made by two parties but one location can be by them, for it is but a single discovery.

4. No man, nor association of men, being rational, would discover a vein or lode and so describe the location as to make one of the end lines run through the center of the discovery shaft, thus leaving territory not located in which it was demonstrated ore existed, and which might have been included in the description.—*In re the Poplar Creek Consolidated Quartz Mine* (comprising the Pine Nut and Gorilla locations, Marysville, Cal.)—[*Secretary's decision Jan.* 3, 1893.]

RES JUDICATÆ—MINERAL LAND—PREFERENCE RIGHT.

1. An order of cancellation is final as to the rights of the entryman in the absence of appeal, and no right under the canceled entry can be subsequently asserted as against the intervening adverse claim of another.

2. The preferred right of entry accorded a successful contestant by the act of May 14th, 1880, may properly include an agricultural claimant who successfully contests a mineral claim, and clears the record thereof.

3. A *bona-fide* pre-emption claim, lawfully initiated prior to the repeal of the pre-emption law is protected by the terms of the repealing statute. —*Dorneu v. Vaughn.* (involving 99.71 acres at Sacramento, Cal.)—[*Decision January* 5, 1893.]

PERSONALS.

Mr. W. S. Austin, mining engineer of the Pyritic Smelting Company, Limited, has been in this city.

Mr. O. H. Hahn has resigned his position as general manager of the Transvaal Silver Mines, Limited, and will shortly return to the Western States.

Mr N. W. Chapman, superintendent of the Buxton Mining Company, Deadwood, S. D., has resigned his position to accept one with a large bridge building firm.

Mr. T. Spencer Miller, of the Lidgerwood Manufacturing Company, New York, and who has but lately recovered from a severe illness, has started on a short trip South. Mr. Miller goes on business connected with his company, and for his health, which his many friends trust may be benefited greatly.

E. P. Broughton, formerly local agent of the C. & E. I. Railroad, Chicago, has been appointed general superintendent of that road. This gives coal men doing business over that road a great deal of satisfaction and pleasure, as he is thoroughly conversant with their requirments, and already a material change has been wrought by his energy and capability.

Mr. Charles G. Eddy has resigned the vice-presidency of the Norfolk & Western Railroad to become second vice-president of the Philadelphia & Reading Railroad, vice Charles Hartshorne, who will be made third vice-president in place of Robert H. Sayre. The latter becomes fourth vice-president, and Mr. J. R. Young, at present fourth vice-president, will be made fifth vice-president. The duties of Messrs. Hartshorne, Sayre and Young are in no wise changed or disturbed. The operating department will be in charge of First Vice-president Theodore Voorhees, while Second Vice-President Eddy will have general supervision of the traffic department.

SOCIETIES.

The Society of German Engineers has offered a prize of 5,000 m. ($1,250) for the best essay on "The Development of Steam Engine Construction During the Last 50 Years in the Principal Industrial Countries." The communications must be written in German, and must be sent to the society before the 31st of March, 1895. The following eminent men, professors and engineers, have consented to act as judges, and their decision is final: Professors Bach, of Stuttgart; Busley, of Kiel; Doerfel, of Prague, and Stribeck, of Darmstadt, besides the practical engineers, Huber, Stuttgart-Berg; Krumper, Augsburg, and Zueblin, Winterthur. The composition of the awarding jury is all that could be asked, as it will ensure the proper theoretical and practical treatment of this important subject. There is, perhaps, not a single steam engine now at work that comes up to the full measure of its capacity for transforming heat into work, as great as have been the advances during the past century, we are still lagging a long way behind theory. The contest for this prize is not limited to the members of the Society, so that we may expect some notable papers from the liberality of the conditions. Further information may be had from H. Caro, Verein deutscher Ingenieure, Berlin.

The sixty-fourth meeting and the twenty-second annual meeting of the American Institute of Mining Engineers will be held at Montreal, Canada, beginning February 21st, 1893. The headquarters of the Institute will be at the Windsor Hotel, but the sessions will be held at McGill University. The Mining Society of Nova Scotia, the General Mining Association of the Province of Quebec, and the Provincial Mining Association of Ontario are expected to hold meetings, including a general mining conference in Montreal, during the week of the meeting. The following programme is provisionally announced. Tuesday: Formal opening and reception in Windsor Hall; an address of welcome is expected from His Excellency Lord Stanley, the Governor-General. Wednesday—Sessions of the Institute, sleigh rides and entertainment by the Montreal and St. George Clubs. Thursday—A morning session of the Institute, in the afternoon the institute will take part in the General Mining Conference, and in the evening w ll attend the formal opening of the new engineering buildings at McGill University. Friday—Continued first session of the General Mining Conference, sleigh rides, in the evening a fancy dress carnival, given by the Victoria Skating Club. Saturday—Excursions to Radnor Forge, visit to works of Canadian Iron Furnace Company, and visits to Lac-a-la-Tortue and Grand Piles, visiting bog and lake ore deposits. A large number of papers have been announced for the meeting. It is expected that the attendance of the ladies will be unusually large. Communications as to hotel arrangements should be addressed to Mr. B. T. Bell, secretary of the local committee, whose address will be Ottawa, Canada, until the 18th inst. Arrangements for transportation may be made with Thomas Cook & Son, 260 Broadway, New York.

The Engineers' Society of Western Pennsylvania held its thirteenth annual meeting on Jan. 17th, President Alfred E. Hunt in the chair. The secretary gave the present membership to be 426. Of the 116 admitted during the year, 57 are engineers or managers of industrial establishments, 51 chemists, 5 specialists and 2 unclassified. Ten regular meetings were held, at all of which papers or reports were submitted and discussed. The address of the retiring president was then read. It referred to the many large engineering plans now being developed and the possibilities for next year. By ballot the following officers were elected for the ensuing year: Max J. Becker, president; Thomas H. Johnson, vice-president; Walter E. Koch and Emil Swensson, directors; A. E. Frost, treasurer; R. N. Clark, secretary. The annual meeting of the Chemical Section was held January 24th, Prof. Francis C. Phillips in the chair. The following officers were elected by ballot: Mr. Joseph H. Eastwick, chairman; Mr. Fred Crabtree, vice-chairman; Mr. James O. Handy, secretary; Mr. James Camp and Mr. George Faunce, additional members of Board of Directors. Prof. F. C. Phillips, the retiring chairman, delivered an address, in which he referred at length to the giving of expert evidence before the courts. He deprecated the disrepute into which such evidence was sometimes thrown by the too great zeal of chemical experts, to make out a strong case for clients by whom they were employed. Such zeal might often lead to the suppression of certain facts and undue emphasizing of others. The secretary, Mr. Jas. O. Handy, then exhibited a large number of results obtained by several members in investigating the determination of sulphur in pig iron. The effects of hydrochloric acid of different strengths and temperatures when used as a solvent in the evolution method were fully shown. Acid of strength 3 parts acid to 1 part water and temperature 90° gave the highest results obtainable by the evolution method, and solution took place most rapidly. All these results in sulphur determination in pig iron by the evolution method were still from 14 to 34% lower than results by the aqua regia method. Mr. F. Crabtree said that vanadium had caused especially low sulphur determinations when present in pig iron made in Missouri. The annual dinner was held at the Duquesne Club on January 26th.

INDUSTRIAL NOTES.

The Bucyrus Steam Shovel and Dredge Company, Bucyrus, O., is making good headway in the erection of the new works at Milwaukee, Wis.

The blooming department of the steel mill and old rail mill of the Bethlehem Iron Company, South Bethlehem, Pa., started up on the 30th ult.

The Anchor Foundry and Machine Company, of Pittsburg, Pa., owned by Wharton McKnight, failed on the 1st inst. Liabilities about $124,000; assets about $100,000.

The Jeffery Manufacturing Company, manufacturers of elevating and conveying machinery and chain belting, etc., have issued a new illustrated catalogue for 1893, showing their various lines of products, including their coal mining machinery.

The Carpenter Steel Works, of Reading, Pa., has just shipped two car loads of projectiles to the government. This is the largest shipment as yet made. This finishes the second contract with the government. The third contract will require nearly two years more for its completion.

The Berlin Iron Bridge Company, of East Berlin, Conn., will build the new machine shop for S. F. Hodge & Co., Detroit, Mich. The building will be 150 ft. long, and of the modern type, the central portion being 40 ft. in width, controlled by a traveling crane of 20 tons capacity, with a wing on each side 22 ft. in width, the wings being two stories high.

Harrington Brothers, of the Shandon Chemical Works, Cork, Ireland, whose advertisement will be found on another page, are manufacturing large quantities of chemicals of guaranteed purity for analytical work, and photographic, medicinal and technical chemicals. There is a large demand for these products, we understand, from nearly all of the principal scientific institutions of Great Britain.

The Pennsylvania Railroad Company last year straightened its main line tracks at Union Furnace, Pa., and, in so doing, removed and appropriated a limestone mountain belonging to John Wallace. Wallace had been shipping the limestone to the Carnegie Company at Pittsburg for use in Bessemer steel works. He asked $20,000 damages for his loss, and a jury in Judge Landis' court at Hollidaysburg, Pa., awarded him $4,500.

The stockholders of the Southeastern Coal and Iron Company held their annual meeting in this city on the 30th ult. The board of directors and all the officers of the company were re-elected unanimously. These are C. Lawrence Perkins, president; T. G. Condon, first vice-president and general manager; W. R. Varker, second vice-president; R. P. Perkins, secretary and treasurer; and directors, C. Lawrence Perkins, Treadwell Cleaveland, Sheppard Gandy, R. P. Perkins, T. G. Condon, W. R. Varker and J. B. Gilchrist.

A new scale of wages at the Edgar Thompson Steel Works of the Carnegie Steel Company (Limited), has just been announced. The wages of laborers, tonnage men and the employees of other departments are to be reduced. A reduction of wages has also been ordered at the Braddock Wire Works. The men do not take kindly, and there may be a strike. All departments named committees for a conference on the 2d inst. Andrew Carnegie, accompanied by President H. C. Frick, Secretary Lovejoy and a number of other officials of the Carnegie Steel Company visited the works at Homestead and Braddock on the 1st inst. The object of the visit, according to the officials, was to inspect the works and to get a general knowledge of the kind of work being done. Mr. Carnegie always visits the mills when in Pittsburg, and the trip to Homestead had no other significance.

Messrs. Fraser & Chalmers, of Chicago, are introducing into this country mining pumps and compressors of the Riedler type, of which they have control. The salient feature of these pumps is positive closure of the valves, which is so effected as to obtain the full lift, with increased speed, greater simplicity of construction, smaller number of valves, reduced wear and improved efficiency. These advantages over the usual type of construction are proved by over 300 installations in Europe, in deep mines, city water works (notably in the city of Paris), and for every pumping and compressing service. These pumping engines are to be supplied to the city of Boston, Mass., and Fraser & Chalmers are installing the first Riedler mining pump in the United States for the Boston & Montana company. This has 5⅞-in. and 8-in. plungers, 16-in. and 25-in. steam pistons, all 24-in. stroke. Its duty is 900 gallons per minute, lifted 600 ft.

A press dispatch from Pottstown, Pa., states that Messrs. Jacob Fegely and William M. Gordon were appointed receivers for the Pottstown Iron Company by Judge Biddle on the 30th inst., and fixed their security at $500,000. The liabilities are placed at $2,000,000. The company employs about 2,000 men, operates large rolling mills, blast furnace, nail factory and steel works. The company has a product on hand in process of manufacture worth nearly $400,000. The bill in equity filed by creditors for large amounts alleges that the corporation is insolvent, and sets forth the need of receivers "to take charge of large and scattered assets and protect the business plant of the company, now in full operation, and fulfill the contracts alread made." In the bill it is also asserted that "the business is so extensive and valuable that, if it is maintained, it will probably be able to pay a large amount of its indebtedness, if not all. The company's representatives at Philadelphia, Pa., say that the business will be continued.

Justice Landon, in the Kings County (N. Y.) Supreme Court, appointed Reginald P. Rowe receiver of the National Lead and Oil Company, on the 30th ult., under proceedings taken for the voluntary dissolution of the company. The company is one of the corporations absorbed by the National Lead Company, of New Jersey, the successor of the National Lead Trust, of which it was a constituent part. The petition for dissolution was signed by Reginald P. Rowe, the vice-president; W. P. Thompson, B. C. Webster, J. G. Stecker and John L. Steen, who make up a majority of the Board of Directors. There was some opposition from a small majority. Elihu Root, appeared for the company. Speaking of the significance of the action taken, he said: "The trustees of the old trust held stock of different corporations. There was a New York company known as the National Lead and Oil Company, and also corporations in New Jersey, Missouri and other States. In the reorganization over in New Jersey, when the National Lead Company was formed, these old corporations which made up the trust conveyed all their property to the new company. That still left a corporation existing here. It has conveyed away all its property, paid all its debts and gone out of business. This was merely the statutory method of burying it decently. It is dead and buried now. The directors took proceedings for a voluntary dissolution of this old company. Messrs. Unkles and Bailey were the only men who tried to organize any opposition, but they were defeated. A few days ago Justice Andrews, here in New York, also overruled a demurrer made by them against the trustees of the old National Lead Trust. I do not know whether or not similar proceedings will be taken to dissolve the absorbed corporations in other States. That is left to counsel in those States."

Representative C. W. Stone, of Pennsylvania, has reported from the House Committee on Coinage, Weights and Measures a bill fixing a standard gauge for the measurement of sheet steel and iron. In the report submitted on the 31st ult. Mr. Stone says that at present there is no uniform or standard gauge and the same numbers in different gauges represent different thicknesses of sheets and plates. This has given rise to much misunderstanding and friction between employers and workmen, and mistakes and frauds between dealers and consumers. There are, it is said, a dozen different gauges in use in the United States, and no two are alike. All use descriptive numbers to designate the different thicknesses of plates and sheets, but in no two does the same number indicate the same thickness. One gentleman stated before the committee that in a single contract made by him it would make a difference of $40,000, dependent upon what gauge regulated its performance. Workmen contracting under one gauge might lose a quarter of their wages, if compelled to settle by another gauge. The United States imposes tariff duties on sheet iron and steel by their descriptive gauge numbers, but there

is no legal authoritative standard for determining the thicknesses of sheets their numbers describe, if dispute should arise. To remedy all this the standards reported by the committee have been indorsed by the Amalgamated Association of Iron and Steel Workers, the Association of Manufacturers of Sheet Iron and Steel, and the National Iron Roofers' Association as providing the best practical gauge. The bill with the gauge recommended has been submitted to the superintendent of the Coast and Geodetic Survey, who has charge of the government standards of weights and measures, and approved by him. It is also approved by the Secretary of the Treasury.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting machinery or supplies of any kind will notify the Engineering and Mining Journal of what he needs, his "Want" will be published in this column and his address will be furnished to any one desiring to supply him.

Any one wishing to communicate with the parties whose wants are given in this column can obtain their address at this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the Engineering and Mining Journal are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

Goods Wanted at Home.

2,890. 220 tons 40-lb. second-hand steel rails, suitable for relaying. Georgia.
2,891. Two-in. line shaft, 55 ft. long. North Carolina.
2,892. A moulding machine and a matcher. North Carolina.
2,893. A swing cut-off saw and a resaw. North Carolina.
2,894. 300 tons second-hand 35 or 40-lb. steel or iron rails. Alabama.
2,895. A gig saw and a shaper. North Carolina.
2,896. A lathe. North Carolina.
2,897. A planing mill. Virginia.
2,898. A 20 HP. stationary tubular boiler. North Carolina.
2,899. A spoke lathe. Virginia.
2,900. 3,000 ft. water pipe, 4 in. to 6 in. diameter, inclusive, to stand 150 lbs. pressure. South Carolina.
2,901. A bark mill. Virginia.
2,902. A dry kiln and a combined tile and brick machine. Mississippi.
2,903. Stave machinery. Virginia.
2,904. Machinery, etc., to supply and operate water works. West Virginia.
2,905. A band saw mill complete, with trimmers, edgers and planers. Florida.
2,906. An engine and boiler. Virginia.
2,907. An electric light plant. West Virginia.
2,908. A rope transmission, direct drive from engine to counter shaft. Kentucky.
2,909. A 75 H. P. engine and boiler. Florida.
2,910. A small canning factory outfit; capacity about 3,000 cans per day. Texas.
2,911. Staves, kiln dried and jointed, 29 in. × 4 ins. × ⅜ in.; also heads, kiln dried, 17¼ in. in diameter, and patent coiled hoops, 6 ft. 6 ins. Florida.
2,912. A small second-hand steam hammer. Mississippi.
2,913. 30-lb. second-hand iron or steel rails. Alabama.
2,914. A 25 HP. portable boiler. Florida.
2,915. Hand or power threshing machinery. South Carolina.
2,916. Pipe threading machine, 2 in. to 4 in. Kentucky.
2,917. A good second-hand tram engine to run on wooden tram, to haul 5 to 10 tons. Florida.
2,918. A grist mill, including fixtures, elevator, etc. Georgia.
2,919. Prices, etc., of excelsior machinery. Texas.
2,920. Addresses of manufacturers of ferroid. New Jersey.
2,921. 1½ miles of 40-lb. steel T-rails. North Carolina.
2,922. A saddle tank engine about 15 × 24. North Carolina.
2,923. Machinery for a canning factory of a capacity of 2,000 to 5,000 cans per day. Florida.
2,924. Prices, catalogues, etc. of machinery for oil mills. Florida.
2,925. A second-hand turbine water wheel with register gate of sufficient capacity to drive saw mill under 6 ft. head. North Carolina.
2,926. A good second-hand saw mill. North Carolina.

GENERAL MINING NEWS.

ARIZONA.

Cochise County.

Copper Queen Mining Company and the Holbrook & Cave Company.—According to the Tombstone "Prospector" these companies have consolidated. The capital stock of the former has been increased from 140,000 shares to 200,000 shares of the par value of $10 per share. The increase of 60,000 shares has been given to the Holbrook & Cave Company for its mines, which include the Neptune group. The papers on record are said to show that the indebtedness of the Queen company is but $150,000, and that the capital stock, $1,400,000, is all paid up.

Maricopa County.

Waterval Mining Company.—The Supreme Court has rendered a decision in the case of this company, owner of the Black Eagle mine, versus the owners of the Big Comet mine. The owners of the Big Comet mine followed the vein of the Black Eagle, and the latter corporation began suit in ejectment. The lower court decided in favor of the defendant, basing its finding on four decisions of the Supreme Court of Colorado, and one by United States District Judge Hallett, of that State, who construed Section 2326 of the revised statutes to apply to the crossing of veins on a strike. The case was appealed, and the appellant pointed to the fact that Section 2322, which applies to transverse veins, is directly opposed to the theory of the Colorado courts, and was virtually repealed by those decisions. The Supreme Court took a similar view of the same, and reversed the judgment of the lower court.

CALIFORNIA.

(From our Special Correspondent.)

The Senate Committee on Mines and Mining of the State Legislature, will report favorably on an important measure introduced for the purpose of providing that hydraulic mining may be carried on wherever it can be done without injury to navigable streams. The bill also provides for the creation of a Board of Debris Commissioners and the appropriation of $20,000 for the construction of dams and retraining works, provided Congress appropriates at least a similar amount.

Mono County.

Bodie Consolidated Mining Company.—About 6 in. of fair-grade ore is showing in the face of the north drift No. 3 on the 300 level.

COLORADO.

Denver Natural Gas and Oil Company.—The derrick, engine, drilling tools and all other property of this company situated on the W. C. Henry ranch, about six miles below Morrison, were sold at sheriff's sale on the 19th inst. to satisfy a judgment of $2,030 held by Messrs. McVay & Canfield, who had the contract for drilling the well. The whole outfit was knocked down to McVay & Canfield for $850. The attachment also included all pipes and fixtures at wells Nos. 1 and 2 on the Spickerman ranch. The well on the Henry ranch is down 425 ft., and there are many favorable indications of oil. Whether or not the work of drilling will be continued cannot be definitely stated now.

Dolores County.

A press dispatch states that nearly all the mines in the Rico district shut down on the 1st inst. because the union miners positively refused to work for $3 a day, their wages having been $3.50. The sheriff has sworn in a large number of deputies.

El Paso County.

Calumet Mining and Milling Company.—At a meeting of the directors of this company held in Manitou on the 24th ult. the following officers were elected: President, Major John Hulbert; vice-president, W. Pittman Page; treasurer, Senator M. A. Leddy; secretary, D. L. Sterling. The meeting was the occasion of considerable interest, as it followed a stormy meeting of the stockholders, at which the first officers named, together with L. R. Ehrich and R. E. Newbury, were chosen directors by rather a close margin of stock. The interest centers in the fact that some time ago a lease was taken on the Burnes lode of the Calumet company, which involved a bond to sell for $30,000. Shortly after the lease was taken the mine proved to be a very valuable propetry, and it is now claimed that this fact was known to two of the directors, and that they were in collusion with the leasers to defraud. A quorum of the late directory recently took action rescinding the lease, and the new directory has employed attorneys to protect the company's interests in the matter, which means that the leasers will be at once enjoined pending a suit to recover the property. The company claims to have ample evidence to sustain their case, and as the lessees are disposed to fight, the matter will be thoroughly ventilated in the courts.

Gilpin County.

Spur Daisy Mining Company.—High grade ore is being taken out of the Two Sisters mine, at Black Hawk, by this company. The property is an old location which has been practically abandoned for a number of years, and is one of the numerous mines which has been reopened during the past two months. The company is at present taking out of the Two Sisters mine six cords daily, which is said to run as high as 18 oz. gold per cord, with an average of 8 oz. The president of the company, Mr. L. W. Tatum, has leased 50 stamps in the Black Hawk mill, where the entire product of the mine is being handled.

The old Buel mine, which was reopened a short time ago, made its first shipment or ore to the smelters last week. The water has been lowered to the 400-ft. level. A new Cameron pump is being placed in the mine, which will facilitate the draining of the mine; a large force of miners will then be given employment.

Lake County.

Tabor Mining and Milling Company.—In the United States Court at Denver on the 20th inst. papers were filed in the suit of Anna L., Mary H. and Cecelia L. Finnerty vs. Peter W. Breene, John McComb and the Tabor Mining and Milling Company. Anna L. Finnerty lives in St. Louis and the other two plaintiffs are residents of Iowa. The action grows out of a one-eighteenth interest which the plaintiffs claim in the Big Chief lode mine in the California mining district. It is alleged that Messrs. Breene and McComb, who claim to own the entire property except the one-eighteenth interest of company, have paid nothing to plaintiffs of their lawful share in the proceeds of the mine, but have appropriated the entire profits to themselves. Further it is alleged that Breene and McComb have taken many more thousands of tons of ore from the Big Chief mine than they admit, with a view to defrauding the plaintiffs, and have pretended to take larger quantities of ore from adjacent mines also controlled by them with the same purpose. The plaintiffs claim that this plan has been systematically pursued with regard to the Monte Cristo, Catalpa and Castleview mines, which are adjacent to the Big Chief. The plaintiffs ask for a receiver to be appointed and an accounting rendered in their favor.

Ouray County.

Belmont.—This mine, near Telluride, has been sold to Thomas J. Waters for $47,600. The sale (according to the Denver "News") was the direct result of the failure of the electrical machinery to do its work. It is claimed the dynamo was too small, and the application of the direct current principle in an altitude where electrical storms are frequent proved disastrous to the experiment. Mr. Waters was seen, and stated that the mine would be started up again about the 1st of June. Owing to heavy snows, the new machinery cannot be taken to the spot before the 1st of May. "With present facilities, under favorable conditions," said Mr. Waters, "the mine is capable of producing 60 tons of ore a day, yielding an average of $10 in gold on the plate and 3% concentrates, worth $50 per ton. A new dynamo will be purchased, and the alternating current will be made use of instead of the direct current."

Pitkin County.

Emma.—Judge Riner, sitting in the United States District Court, at Denver, has made his decree in the case of Margaret Billings and others against Jerome B. Wheeler and the Aspen Mining and Milling Company. It confirms the decision of the United States Circuit Court, and declares the title and right of the widow and children of William J. Wood established against the defendants. The plaintiffs are adjudged to be entitled to possession of a one-third interest in the Emma mine, and one-third of the entire proceeds of that mine from the time it became a paying property. It is also decreed that defendants shall account to complainants for one-third of all the capital stock of the Compromise company, which they received in consideration of their conveying to said company a portion of the Emma mine. The complainants are declared to be entitled to one-third of the value of the stock of the Compromise company, and also to one-third share of the company's dividends received by defendants up to the present time. Further, the complainants are decreed one-third of any and all sums of money in any company realized by the defendants in consideration of ore taken from the Emma mine, also lawful interest on all the sums of money mentioned above. The accounting is ordered to be made before S. C. Hinsdale, master in chancery.

San Miguel County.

Shipments of ore and concentrates from Telluride since January 1st to January 27th amounted to 1,419 tons.

CONNECTICUT.

New Haven County.

The trouble at Stony Creek, between the granite cutters and quarry owners, which has continued since last May, has been adjusted, and the men returned to work on the 30th ult., at the old wages.

IDAHO.

Alturas.

Idaho Gold Company (Limited).—January 12th, Mr. G. A. McCornick, superintendent of the Idaho Gold Company (Limited), states that the rumor that the Alturas gold mine, near Rocky Bar, had lost the ledge, and that the mill had closed down in consequence "is absolutely false; the vein has not been lost at any time. On the contrary, the vein has been drifted on for 600 ft. on the 700 or lowest level, showing a strong and well defined ledge averaging from 4 to 10 ft. of low grade quartz."

Red Elephant.—Last week ore was struck on what is known as "the 48-level," which is about 650 ft. from the surface, on the pitch of the vein. The ore vein has since widened to 22 and 24 in. of solid gold galena carrying a good percentage of gray copper.

Star.—The new shaft of the Star mine reached the level of the crosscut yesterday at a depth of about 160 ft. from the surface. It will be con-

tinued to the 250-ft. level, which point is expected to be reached in about a month. In the meantime the tunnel will be connected with the shaft, and the old workings thus thoroughly ventilated and drained, and a lift of 160 ft. thus saved, both in pumping and hoisting. When the shaft attains the 250-ft. level it will open 100 ft. of "backs" in virgin ground, and by drifting both ways the extent and value of the ore vein can be ascertained. The shoot was 208 ft. long where the leasers worked it, and it is not likely to be any less in depth.

ILLINOIS.

Streator.—Three men were killed January 30th in a small coal mine operated in this city by Peter Rynn. The mine had been closed down while repairs in the hoisting apparatus were being made, and about 1 p. m. cries were hear from the bottom of the shaft. Those who rushed in found the three men lying horribly crushed and mangled under a huge rock that had fallen.

MICHIGAN.

Copper.

Agate Harbor.—A valuable discovery of mass copper at this mine is reported to have been made a few days ago.

Atlantic Mining Company.—It is reported that the average cost price per pound of copper, based upon the treatment of 300,900 tons of rock, was 10·75 cts., the average selling price being 11·89 cts. The net surplus on December 31st was $295,515. Net mining profit for the year $42,681.

National Mining Company.—At this mine they have come upon another nest of mass copper, which at present is looking promising. They have taken from it one mass weighing about four tons, besides considerable small copper, and are now working on another mass that is well exposed and promises to be a large one. These masses are coming from the 130th level, on the fissure vein which has been productive in copper from the surface down.

Quincy Mining Company, Quincy.—It is reported that this company is about to undertake the refining of its own copper for the market. It has purchased quite a strip of land on the shores of Portage Lake, and will erect a smelting works and in all probability manufacturing works, says the Ontonagon "Miner."

Tamarack Mining Company.—This company has purchased the Cliff mining property for the timber which it contains.

Iron.

(From our Special Correspondent.)

Another shaft is to be put down in the Lake Angeline basin, somewhere near the eastern end. An extensive system of electrical underground trams are to be put in by both the Cleveland and Lake Angeline companies, a fact which the Engineering and Mining Journal noticed several weeks ago. The output of this basin for several years to come will be measured only by the demand for ore; it alone could produce a million tons annually, if called for.

Lake and rail shipments for 1892 from Escanaba foot up 4,176,959 tons. This year they will be at least a million tons more. The celebrated Schlesinger syndicate is to erect at that port extensive coke furnaces of the latest improved patterns. One is somewhat overwhelmed in thinking of the prospective iron manufacturing importance of Lake Superior basin as the great Northwest grows. Truly it "doth not yet appear" what we shall be.

Unusually large stock piles are growing at all the mines. Some of them find it difficult to get ground upon which to deposit the ore as raised. Higher shaft houses and higher stock piles would seem to be one way out of this difficulty.

Gradually those living at the Saginaw, now closed forever, are moving away and getting work at other mines. The exodus in the spring from Marquette County to the Mesaba promises to be very large. The Marquette Range being the "mother" range, this is not at all surprising.

Heretofore, explorations at the Winthrop, south side, have been conducted too far south. Lately, core drill borings close to the south foot of the diorite have shown much brighter indications. A workable body of ore is now found, and about 60 tons per day are raised to surface. This promises to be a "big thing," as development goes on.

Iron—Gogebic Range.

Palms.—Fire broke out in No. 3 shaft of the Palms mine on the 26th ult. The fire spread to No. 4 shaft, despite the exertions made to subdue it. Steam was forced into the mine, and the shafts were partially filled with snow. The miners were all rescued. All operations at the mine have ceased save those of extinguishing the fire.

Iron—Marquette Range.

Fitch.—Work with a small force of men has been resumed at this property. It is more of an exploration than anything else, and it is hoped new and larger lenses than those now showing will be found. The ore is of excellent quality, but thus far the vein has been very irregular, and mining is thus rendered difficult, and the ore expensive to secure.

Foxdale.—The drift from the bottom level, 200 ft. from surface, is now all in ore of good quality, and it is thought that a mine of value will be developed at this point. They are now following the trend of the ore, and will run a cross-cut in the near future to determine something as to its probable thickness.

Iron—Menominee Range.

Lincoln.—It is thought that work will be resumed at this mine.

MONTANA.

Humboldt County.

Sutherland Antimony Mine.—This property was purchased in 1891 by a New York company, who erected reduction works, which, so far, have given poor results, and have produced but little regulus. Fifteen miners are now at work. The workings are down 250 ft., and three levels from 300 to 700 ft. are driven on the vein. The ore assays in places as high as 69%, but the average shipments run 55%. All told, 200 tons were shipped in 1892 to Mattison, of San Francisco. It is expected by Francis M. Gore, manager of the mine, that about 600 to 800 tons will be shipped during the first six months of 1893.

Jefferson County.

Boston.—This property is said to be flourishing. The shaft is 200 ft. deep, and the drifts and stopes contain a 5-ft. body of free milling gold rock that will work $10 per ton. Sixteen inches of this body on the hanging wall has milled $60 per ton at the Butte Reduction Works. The Montana company is interesting itself in these mines, and in one of them the company has a shaft down 200 ft., and two tunnels cross-cutting the ledge from the mountain side. The prospects thus far are very encouraging, as the assays are high.

Missoula County.

Missoula.—Petitions asking for the opening of a portion of the Flathead Reservation have been circulating for some time. The petition covers an area of 600,000 acres, and it is said that the Indians are willing to dispose of this amount to the government.

Silver Bow County.

Blue Bird Mining Company.—The Blue Bird company, in the past, prior to the shut-down, had done much prospecting on property belonging to it and adjacent to the Blue Bird shaft. The Poorman, that lies a little south of west, had a three-compartment shaft sunk to the 300, and a drift at that point connected with the 500 of the Blue Bird. In running this drift much vein matter was encountered, enough to demonstrate that the ore continued in depth, though in running this drift only bunches of ore were encountered. The Blue Bird proper is about the only lead of any consequence on that ridge that slopes toward the gulch, and the small seams that crop out on the surface in so many places are claimed by many to be feeders to the Blue Bird vein only. As to the intentions of this company in the future, it can not yet be ascertained to a certainty. The shaft is full of water, but all the pumps were hoisted to the surface, and the pipes could be put into position in a short time were the company to come to the conclusion to work through the old shaft without sinking a new one. This vein dips to an angle of many degrees south, and if another 100 ft. were to be sunk, the expense of cross-cutting from this point would be greater than to sink a perpendicular shaft at or near the site of the old office, and between it and the mill.

Butte & Boston Mining Company.—This company has commenced operations on the Anderson, adjoining the Solid Muldoon on the west. The property is directly west of the Belmont and the Ground Squirrel. The former only last week, after a year in developing, commenced to take out ore. Operations on the Ground Squirrel, just east, are now suspended.

Estella.—The lease on this mine, which was taken by F. Augustus Heinze from James A. Murray, of Butte, is now the subject of litigation. In our issue of January 28th an article from the Butte "Intermountain" was published giving Murray's claims. These were met when the case was heard in court by a general denial. An injunction on the working of the property was granted, to be in effect when Murray filed a bond in the sum of $125,000. It is generally regretted in Butte that Mr. Heinze should be so impaired in his work, as he has shown remarkable enterprise in developing this mine, and in erecting a smelter to work the ores of it and of other mines, in the unprecedented time of 70 days. Murray's suit and claims are generally regarded as attempts to injure Heinze's credit, so as to oblige him to relinquish his undertaking. Murray's connection with the Bluebird suits and with the suits brought on account of his mineral location of a portion of the town site are well known, and his methods are condemned by mining men as prejudicial in the extreme to the best interests of Montana, and by many are characterized as disreputable, while Mr. Heinze has an unsullied record. We regret that this case should have slipped into our columns through an oversight.

NEVADA.

During December, 1892, the Eureka & Palisade Railroad Company received for transportation to Salt Lake City 1,381 tons of ore. Owing to prevailing storms the shipments were lighter than during any previous month of the past year. Eureka District—From the Diamond mine, 605 tons; Eureka Consolidated mine, 334½ tons; Jackson mine, 131½ tons; Hamburg mine, 43½ tons; Richmond mine, 31½ tons; Bullwhacker mine, 30 tons; and Delaware mine, 14 tons. Total Eureka district, 1,190 tons. White Pine—From T. Cornell, 158 tons; Rocko Cragnaza, 21½ tons; and Zoanni Brothers, 11½ tons. Total White Pine, 191 tons.

Elko County.

Del Monte Mining Company.—At the annual meeting of this company, the old board was re-elected. The following are the officers: E. Scott, president; J. W. Pew secretary; and R. M. Catlin, superintendent. The company has an indebtedness of $208,244.33.

North Commonwealth Mining Company.—At the annual meeting of this company the old board of directors was re-elected, together with the following officers: E. Scott, president; F. A. Berlin, vice-president; and J. W. Pew, secretary. The company has $1,713.34.

Esmeralda County.

(From our Special Correspondent.)

Fort Diablo Mining Company, Candelaria.—A bullion shipment, consisting of 5,508 fine ounces, has been received at the San Francisco office.

Eureka County.

(From our Special Correspondent.)

The Eureka & Palisade Railroad Company transported during December, 1892, to Salt Lake City, 1,381 tons of ore. From the Eureka district there were 1,190 tons; and from White Pan, 191 tons; The shipments were lighter than during any previous month in the year, owing to heavy storms.

Gould & Curry Mining Company.—Stringers of quartz are showing in the face in the west cross-cut, started 432 ft. from main west drift, 200 level. To the end of 1892 the mine produced $15,726,711.56, and up to October 6th, 1870, the date when the last dividend was paid, the sum of $3,826,800 had been disbursed to stockholders. Assessments have been more continuous, and to date $4,623,600 has been collected.

Storey County—Comstock Lode.

Belcher Mining Company.—The latest weekly official letter says: "The west cross-cut from the south drift on the 350-ft. level is now out 84 ft. There is a small streak of ore in the face, assaying between $10 and $20 per ton. The north drift from the winze on the 350-ft. level is out 138 ft. The face is in porphyry. The west cross-cut, 25 ft. north of the winze on the 350-ft. level, is out 38 ft. The face is in porphyry, with small seams of quartz through it. Have been engaged during the greater part of the week in repairing on the 200, 300 and 400 ft. levels."

Consolidated Imperial Mining Company.—The latest weekly official letter says: "We are hoisting and shipping to the Brunswick mill for reduction some ore found in small streaks and old filling on the upper levels.

Crown Point Mining Company.—The latest weekly official letter says:" The west cross-cut from the southwest drift 150 ft. south of the shaft on the 400 level, is out 219 ft. The face is in a mixture of porphyry and clay. There is no change of importance in the streak above the 160 level. Have shipped to the Mexican mill for reduction during the past week 124 tons and 1,490 lbs. of ore, the average battery sample of which was $18.06 per ton."

Justice Mining Company.—The latest weekly official letter says: The south drift from the north stope, on the 822 level, is out 94 ft. The streak is 3 ft. wide, and assays about $25 per ton. We are stoping out 7 tons of ore per day, the car samples of which average about $25 per ton.'

Savage Mining Company.—The latest official weekly letter says: The amount of ore hoisted was 625 carloads. Shipped to Nevada mill, 525 tons of ore, which were milled. Average car sample assay, $21 per ton. Average battery assay, $20.72 per ton. Bullion yield for the week, $7,612.50. Shipped to United States mint at Carson, January 24th, 432 lbs. of crude bullion. On the 950 level are running a prospecting drift north from the eighth floor of the old stopes. The face is in quartz and porphyry. On the 1,100 level are stoping ore from the eleventh floor up to the twenty-second floor. On the 1,400 level, in the north drift, 50 ft. north of the ore stopes, have started an east cross cut and advanced the same 10 ft. Are still repairing the main south drift and the east drift connecting with the ore chute on this level. Or the 1,450 level are stoping ore upward from the end of the west cross-cut, started 100 ft. from the south boundary. The joint north drift with the Gould & Curry Company, on the Sutro tunnel level, is advanced 850 ft., and has reached the north boundary. All work in this drift by the Savage company was discontinued January 22d, and hereafter the further extension of this drift will be carried on by the Gould & Curry and Best & Belcher companies.

Utah Consolidated Mining Company.—At the annual meeting of this company, the stockholders re-elected the old directors, with H. B. Havens as president, A. W. Havens, secretary, and D. B. Lyman, superintendent.

(From our Special Correspondent.)

The following is the weekly tabulated statement of ore hoisted from Comstock mines and milled,

with the car sample and battery assays, bullion shipments, etc.

Mines.	Tons Hoisted.	Car Sample Assay.	Tons Milled.	Average Battery Assay.	Bullion Product for Week.	Bullion Shipped.
Con. Cal. & Va..	260	32·70	....	....	.....	.....
Crown Point....	.....	.....	124	18·06	.....	.....
Con. New York	184	36·70	167	31·72	.....	$6,283,535
Overman.	.....	.....	.....	.....	.....	.....
Potosi.....	412	33 20	444	25·00	.....	[4] 299 lbs.
Savage.....	3625	21·00	525	20 72	7,612.50	[5] 432 lbs.

[1 2] Cars.
[3] Total amount on January account, $10,720.02.
[4 5] Crude bullion.

NEW MEXICO.

Grant County.

Mineral Point Zinc Company.—The assessment work on this company's mines at Hanover has been completed for the year, and it is expected that the mines will remain idle until it is necessary to do the assessment work again. Large quantities of zinc ore have been shipped from these mines to works in Illinois and Wisconsin, but the manager decided last year to ship no more ore to works in the East. A plan is under consideration for the erection of large works near the mines.

According to the Silver City correspondent of the New York "Sun," the prospect is good for a larger output of gold from the Pinos Altos mines this year than ever before, and it is certain that the output will be much larger than it was last year. The Pacific Gold Company's output is now much larger than it ever has been since the mill was started in July, 1889. Bell & Stephens are taking out ore enough to keep their mill running steadily, and the Manhattan Gold Mining and Milling Company will start up its mill some time during the spring. Quite a number of small operators are at work in the mines, and two mills are kept busy on custom ores.

Operations are to be resumed on an extensive scale in the Mountain Key mine at Pinos Altos. The Mountain Key Mining and Milling Company, after having operated the mine for over three years, failed a little over a year ago. At the time of the failure of the company the mine had been pretty well worked out to a depth of 600 ft. Below the 600 ft. level the ore was found to be lower grade than that in the upper levels, and the company, which was already deeply in debt, was obliged to suspend operations. Since that time individual lessees have been operating on a small scale in the mine and have been making good wages. The mine will now be operated by practical miners and will undoubtedly be made to pay. The Mountain Key mill was leased by the Pacific Gold Company last summer and is still being operated by that company. The ore from the Mountain Key mine will be milled at the Mammoth mill at Pinos Altos.

PENNSYLVANIA.

Coal.

The Indian Ridge collieries at Shenandoah have suspended operations for one month.

An explosion of gas took place on the 2nd inst. in the Conyngham shaft, near Wilkes-Barre, and nine miners were burned, two of them fatally.

Port Royal Coal and Coke Company.—This company's mine at West Newton was discovered to be on fire on the 2nd inst. One man was killed.

A convention of 48 delegates, representing 54 Monongahela River mines, met in Monongahela City on the 2d inst., and unanimously voted to continue the strike begun on September 10th last, when the operators served notice that the prices would be reduced from 3½c. to 3c.

Owing to an injunction issued against the Lehigh and Wilkes-Barre Coal Company by the Lehigh Valley Railroad Company some weeks ago, the Tresckow strippings have been stopped. The clay and rock which are stripped from the coal were deposited on the Lehigh Valley tract, whence the injunction. Three hundred men are thrown out of employment.

William Stein, Mine Inspector of the Fifth Anthracite District, has completed his report for the year 1892. During that period 55 men were killed, 11 less than during 1891. The causes of deaths and nationalities are enumerated as follows: Falls of coal, 21; mine cars, 10; premature blasts, 6; explosions of gas, 8; outside machinery, 2; miscellaneous, 8. Americans, 9; English, 2; Irish, 10; Welsh, 2; Poles, 29; Hungarians, 2; Italian, 1. Kohinser Colliery, at Shenandoah, is given the credit for not having a fatal accident during 1891 or 1892.

Lyttle Coal Company.—This company, at Primrose, has leased the Old Kear coal workings at Wolf Creek, abandoned 20 years ago. This was one of the heaviest producing collieries in the anthracite coal fields.

Pennsylvania Railroad Company.—It was announced at Wilkes-Barre on the 2nd inst. that the Pennsylvania Railroad Company is preparing to ship its entire coal output from Nanticoke and vicinity to the New York market by way of the Central Railroad of New Jersey, to Phillipsburg, and thence over its Belvidere division to Trenton, and on to New York. The new route will be 120 miles shorter than the old one.

Philadelphia & Reading Coal and Iron Company.—This company's financial statement for the month of December shows the following:

December.	1891.	1892.
Gross receipts.....	$1,784,423	$3,317,735
Operating expenses.....	1,623,943	3,147,611
Colliery improvements.....	74,392	63,042
Permanent improvements.....	13 764	7,779
Gross expenses.....	$1,712,099	$3.218,43
Profit from mining	$72,324	$99,303
One month's fixed charges	65,500	68,000
Surplus.....	$6,8:4	$21,303

In the statement the business of the Lehigh Valley department is included for December, 1892, and hence it is impossible to make comparison with the the same month last year. However, the surplus over and above all charges last month amounted to $24,479, against $6,824 in 1891.

Gas.

There is great excitement in McKeesport, over the striking of a natural gas well in the heart of the city. The well has a steadily increasing pressure, great enough, it is calculated, to supply the entire town. The gas was struck at the depth of 2,200 ft.

Oil.

The Schuylkill Coal Exchange has issued the following circular: "Rate of wages for miners of this region for last two weeks of January and first two weeks of February is 5% above the $2.50 basis. The following collieries have returned prices named, fixing this rate of wages from the sale prices obtained for their coal in January: Hammond colliery, $2.57 8·10; Suffolk colliery, $2.68 3·10; Basti colliery, $2.68 2·10; Richardson colliery, $2.66 4·10; Ellangowan colliery, $2.62 2·10. An average of $2.64 6 10, which makes the rate of 5% above the basis.

A dispatch from Susquehanna states that everything was in readiness for laying the pipes of the United States Pipe Line Company through Susquehanna County, and thence eastward, but owing, it is said, to the opposition of the Standard Oil Company and the New York, Lake Erie & Western Railroad Company, the company has changed its plans. Instead of running its pipes from Athens, Bradford County, through Bradford and Susquehanna counties to Hancock, New York and thence to Jersey City, it will reach the seaboard by the way of Athens, Wilkes-Barre and New Jersey. Work will at once be begun between Athens and Wilkes-Barre.

W. J. Rainey, the coke operator, completed the purchase on the 31st ult. of the Mount Braddock works of Robert Hogsett and the coal of the Junk and Yeagley Farms of J. V. Thompson, in all about 1,000 acres of coking coal and a plant of 170 ovens in Dunbar and North Union Townships, Fayette County. The price paid was slightly above $700,000. A. Cummins, of Pittsburg, for several years land agent of the Philadelphia company, conducted the negotiations. This purchase gives Mr. Rainey over 4,000 acres of coking coal in the Connellsville region and 140 ovens. The purchase takes in the last of the coke lands of the Connellsville region on the market, and puts Mr. Rainey second in importance to the H. C. Frick Coke Company.

UTAH.

Salt Lake County.

The Niagara Mining and Smelting Company, operating in Bingham Canyon, made a shipment of crude galena ore on January 23d of 63,306 lbs., which was sold on an assay of 55·35% lead, 10·6 oz. silver, ·065 gold. This shipment is one of the best, as to grade of ore, made by this company for some time, and was taken from their Utah group. On January 13th the same company made a shipment of 24,945 lbs. of crude ore from its Live Pine mine, consigned to the Consolidated Kansas City S. & R. Company, and sold on an assay of 14·45% lead, 30 9 oz. silver, ·08 oz. gold per ton, and on the 19th a shipment of 296 tons of low-grade concentrates to the Hanauer Smelting Works, of Salt Lake City.

Hattie Green No. 2 vs. Black Diamond.—The old question of dips, spurs, etc., was brought up recently by the parties to the above suit. The plaintiffs in the case are Cornelius McLaughlin, John Farrish and Daniel Bader, owners of the Hattie Green No. 2, and the defendants are Henry Hirschman, Charles Loofbourrow, S. Snyder and W. S. Sharp, owners of the Black Diamond, which adjoins and parallels the Hattie Green. The plaintiffs allege that the vein that apexes on their claim dips under the Black Diamond and that the defendants have extracted ore therefrom to the value of $6,000. They ask damages in that amount and an injunction to restrain the defendants from operating on their vein. The defendants claim that the only vein apexing in the Hattie Green is barren and does not produce ore; that all the valuable ore extracted by them has been taken from a vein apexing in the Black Diamond and dipping under the Hattie Green.

Summit County.

Daly West Mining Company.—The ore body opened up on the 1,200 level, a short time ago, says the Salt Lake "Tribune," has been developed enough to prove that it is a good thing. The company has 3,000 ft. on the strike of the vein. A drift is being run in to tap the shaft from the 800 level of the Daly, and as soon as this is completed development work will commence. The vein is very wide and contains both milling and smelting ore. In the near future a mill will be erected in the Park to reduce the ores in this mine, it is said.

Silver King Mining Company.—It is reported that this company is arranging for work on an enlarged scale in the spring. Down to the 700 ft. level the shaft is a single compartment, but below that to the 1,000-ft. level it is a triple compartment. The whole shaft will be made like the lower portion as soon as possible, in order that the new engine may work to its full capacity. New double deck cages and a compressor will be put in. As soon as this work is completed the force of employés will be largely increased. One hundred men are now employed.

Utah & Nevada Coal and Construction Company.—This company, which proposes supplying Salt Lake City and vicinity with cheap coal, is sending out blank contracts which obligate the signers to take a certain minimum quantity at a price not to exceed $3 per ton.

Juab County.

Bullion-Beck Mining Company.—The shut down is still on, and it is reported that the miners are standing firm and say they will not go to work until the old standard of wages is returned. Mr. John T. Harrington reports the directors as stating that when the time came to resume work the old employees would be given the first opportunity. It is understood that the California directors have been urging a thirty-day shut down, and it is thought that the present conditions have been brought about through this pressure and that in thirty days the work will again be started.

WASHINGTON.

Millington.—The Gaul Conda coal mine near this place is reported to be showing up well. The vein is 2 ft. thick and widens as it gets deeper.

Okanogan County.

Ruby Creek District.—According to the Spokane "Weekly Spokesman" the Sunset has five men at work and has made a good strike. There is a working tunnel about 280 ft. long, with a shaft 60 ft. deep. The vein varies from 6 to 22 in. in width. Assays of 96 oz. of silver have been obtained, and the ore is getting richer. The Black Lead shows more gold; some of its assays having shown $232 to the ton. Other samples have assayed $62 in silver. The tunnel is now 140 ft. deep, and has been in ore all the time. The shaft is 95 ft. deep. The vein ranges from 6 to 28 in. in width. The owners of the Moscow have made a good strike on assessment work, and have 16 in. of solid galena, but will probably stop development as soon as the assessment work is completed. The Miller boys have also found a good ledge. Altogether there are 60 or 70 claims in the district that make a good showing as soon as depth has been gained. There is a good road all the way from Volimer to the mines, a distance of 23 miles directly east. Ore can be hauled to the cars for $10 a ton and shipped to Tacoma for $5.50 more.

FOREIGN MINING NEWS.

AUSTRIA-HUNGARY.

On the 28th ult. a partially successful effort was made to rescue the men who were entombed by the explosion in a coal mine at Tokod Grau. Fifty-seven of the men were taken from the mine by means of a shaft that had not been used before for a long time. Flames immediately followed the explosion, and despite the efforts to extinguish them they gained in volume. After the 57 men were saved the fire reached the shaft through which their rescue was effected, thus precluding all hope for the other men in the mine. There are 73 men still in the mine. They are beyond all doubt dead. Altogether about 100 men have perished in the disaster.

BRITISH COLUMBIA.

Kootenai.—Pilot Bay Smelter.

Work on this smelter will be resumed in March, and it is said that it will be in running order by July 1st. J. D. Long, of the company, says: "The smelter building is all completed, ready for the machinery. The boiler house and machine shop have been in use for some time, but are now closed until work is resumed. The assay office is ready for work, and the roaster is nearly done. The foundation for the refinery is completed. A large warehouse for freight is also finished. The concentrator building is also well under way. The company has also constructed an 800-ft. wharf on the north side of the bay. It is well timbered and rock ballasted, and well made throughout. A boat can land alongside of it in any stage of water. The machinery for the plant is all on hand ready to be put in place as soon as the buildings are done. This, as well as the buildings, is of the best description, and the entire plant will be one of the best in the Northwest. It is already being surrounded by a handsome little village that will be one of the most prosperous in the colony.

CANADA.

Ontario.

(From our Special Correspondent.)

Algoma Nickel Mines.—The three mines of the Canadian Copper Company are still closed down pending the decision of the courts in Ohio as to cer-

tain matters in dispute between the company and Mr. S. J. Ritchie, their former managing director here.

Mr. S. S. Ryckman, M. P., of Hamilton, Ont., has lately secured options on nearly all the most valuable nickel properties on the whole range, presumably for a syndicate of English and American capitalists who wish to get a controlling interest in the nickel mines here.

On lot 6, con. 3, Graham, some very high grade cobalt ore was discovered last summer, and the work of further exploiting the property will be started as soon as the snow leaves in the spring. Mr. J. C. Ryan, of East Saginaw, is also organizing a company to work an adjoining claim in the same township.

Mr. Arthur Kitson, of Philadelphia, has purchased a nickel property in Denison, and operations are expected to be commenced soon. Quite a number of other locations are to be opened up this year, and with the growing demand for nickel we look for unprecedented activity and interest in mining here before the present season is over.

The Worthington mine in the township of Drury is being worked this winter on a fair scale. About fifty men are employed in it now. A chute of exceedingly rich ore has been disclosed in one of the shafts of this mine, not far from the surface and carrying over 40 of nickel. This is the richest nickel ore ever found in the district, except at the Vermillion mine.

Some of the finest nickel properties in the district are in the townships of Denison and Graham, where the range "gets her back up," rising in many cases into tremendous hills and ridges of ore above the surface. But their development is retarded by the want of a customs smelter at which ores could be sold. All the companies having smelters here now work their own mines and there is no local market for ores. It is estimated that $50,000 would build a custom smelter with a capacity of 100 tons a day, and such a needed enterprise, if properly managed, ought to pay well.

Province of Nova Scotia.

The Whitney Coal Syndicate bill passed its third reading in the Nova Scotia Legislative Council, at Halifax, the 31st ult., and now only requires the signature of the Lieutenant Governor to become a law. This will probably be given within a few days.

LOWER CALIFORNIA.

From M. Cummenge, mining engineer of Paris and director of the Boleo Copper Mining Company, it is learned that the output of fine copper is now 725 tons per month, all of which goes to France. The coal and coke used in the smelting works come, according to M. Cummenge from England, the freight being from 20 to 25 shillings per ton. The output is ⅛ black copper and ⅞ matte of from 65 to 70% copper. The present superintendent is Mr. Carlos La Forgue.

(From our Special Correspondent.)

The San Fernando copper mine, situated 100 miles south of San Quintin, and 17 miles inland, has been sold to a Denver syndicate for $250,000. The mine was worked extensively by Kelly & Woolridge, of Mazatlan, who were offered $1,500,000 for the property as it stood before their desertion of the country to escape capture for complicity in wholesale smuggling some years ago. Since that time the mine has been idle. There is said to be $75,000 worth of ore on the dumps ready for smelting, and operations will be at once commenced for the production of copper. The ore runs 50 to 55% copper. Dr. O'Clery, a former owner of the mine by virtue of a Mexican patent, will retain an interest in the property.

MEXICO.

Coahuila.

Mexican Onyx Company.—The lease of the large onyx quarries owned by Sommer, Hermann & Company of Mexico, has been extended until 1911 in favor of the Mexican Onyx Company, of Denver, Colo. Mr. James Nasar, vice president and a director of said company, who has been in the city several weeks conducting negotiations which were completed yesterday, has left for the United States to purchase machinery for the company, of which he is vice-president and managing director. He will make arrangements for extensive working of the property, the output from which will be about 200 carloads per annum for the future. These quarries have been successfully operated by the above company for the past five years, and were only awaiting the extension of the lease before introducing the most improved machinery. The quarries are situated near Torreon, Coahuila, at the junction of the Central and International railways. A number of well known capitalists hold large interests in the company, among whom may be mentioned Messrs. Frederick Wolff, of Laredo; W. H. Kelly, H. Mecoy and W. H. Reynolds, of Denver.

Durango.

(From our Special Correspondent.)

Candelaria Mining Company.—A shipment of fifty bags of bullion, valued at $60,000, has been received from the mine.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, Deadwood, S. Dak.; St. Louis, Helena, Mont.; London and Paris, see pages 118 and 120.]

NEW YORK, Friday Evening, Feb. 3.

The statement printed from week to week in this column must be repeated once more. The dullness in mining stock circles has become chronic. There is nothing to enliven the innocuous desuetude which prevails at the Exchange. Now and then, for some reason or other, there is a spurt in one of the stocks, an advance in prices which proves short-lived, and the market returns to its inactivity until some one once more tries to infuse new life into it and fails signally in the attempt.

The Comstocks continue quiet and devoid of features of interest. The demand is small and prices show no improvement. During the week there were sales of 250 shares of Hale & Norcross at 90@95c.; 200 shares of Gould & Curry at 85@95c.; 100 shares of Consolidated California & Virginia at $2.60; 50 shares of Belcher at $1.25; 300 shares of Comstock Tunnel scrip at 25c.; 170 shares of Ophir at $1.90@$2; 200 shares of Sierra Nevada at $1.40@$1.70; 500 shares of Yellow Jacket at 65@85c.; 200 shares of Alpha at 25@30c.; 100 shares of Andes at 47c.; 300 shares of Best & Belcher at $1.35@$1.55; 300 shares of Challar at 60@80c.; 300 shares of Exchequer at 31@32c.; 300 shares of Mexican at $1.45@$1.65, and 100 shares of Potosi at $1.90.

The California stocks were very quiet this week Of Brunswick Consolidated only 500 shares changed hands at 7@8c. The superintendent of this company, writing from Grass Valley under date of the 25th ult., says: "There is no change in either of the drifts on the 600 level. The station at the 700 is about completed, and we will be ready to commence drifting by the end of the week. The east drift on the 600 level was extended 8 ft.; total, 163 ft. The west drift was extended 7 ft.; total 180 ft." There were sales of 400 shares of Belmont at 20c.

None of the Colorado stocks were traded in during the week.

Of the Black Hills shares, Deadwood Terra shows a sale of 100 shares at $1.70.

Phœnix of Arizona was in fair demand, 4,300 shares being sold at 42@45c.

The official sales lists of the Consolidated Stock and Petroleum Exhange this week report sales of 8,700 shares of Monte Cristo at $2.75@$3.20, and of 1,200 shares of El Cristo at 45@50c.

Boston. Feb. 2.

(From our Special Correspondent.)

There has been very little doing the past week in the copper mining stocks, and prices show no important change except in Calumet & Hecla and Tamarack, both of which are fairly firm, with the latter quite strong. A dividend of $5 per share has been declared by the Calumet and the stock declined to $305 with later sales at $308, at which price a large lot was taken to-day. Tamarack advanced from $155 to $161, with a small lot selling at $162. The Montana group have been almost entirely neglected, with sales of less than 300 shares of Boston & Montana at $33½ to $33¼. Butte & Boston shows weakness, although but little has changed hands. The closing sale last week was at $11½, since which it declined to $10½ with no recovery.

Osceola holds fairly steady on small transactions at $35⅜@$36¼ and Franklin maintains its price of last week at $13.

Quincy has sold at $135 and $136 for small lots for investment purposes. The product of 1892 was 6,810¾ tons, a gain of about 400 tons over 1891

Centennial sold at $8, and we note a sale of Copper Falls at $7½, which is same as it sold for in November last.

A small lot of Atlantic sold at $9½, and Allouez at 70c. Wolverine sold same as last week at $18¾. Tamarack, Jr., at $19, a decline of $1 from last sale. Napa quicksilver fold at $5¾@$6.

There is nothing in the present outlook to encourage speculation in this class of stocks, and we cannot look for great activity until there is some change in the condition of the market for ingot copper. With a sharp advance in the price of the metal the market for stocks would quickly respond.

3 P. M.—At the afternoon call, C. & H. sold at $308, and Osceola advanced to $37, closing at $36¾. Tamarack, Jr., sold at $20 for 10 shares.

San Francisco. Jan. 27.

(From our Special Correspondent.)

The current week has been a dull one in the mining stock market. No news from the front has been received that could be twisted out of shape and put to any account in influencing prices. The week opened with values fairly well sustained, but each succeeding day trading has sagged until this morning only 2,675 shares changed hands, and only twelve stocks dealt in. In afternoon session the market continued heavy, with total sales only a trifle in advance of the morning's trade.

The North End Comstocks, despite the limited amount of business, have sold steady. Consolidated California & Virginia selling for $2 45; Ophir for $1.70; Mexican for $1.35; Union Consolidated for 90c., and Utah for 15c.

In the middle group of Comstocks, Potosi has continued to be the most active. Last week a considerable amount of stock was dumped on the market on the report that the outlook in the mill was not so good as previous indications had promised. A change for the better was reported from Virginia early in the present week, and the demand for the stock at once became active. To-day, however, only 600 shares changed hands, selling for $1.30, Potosi sharing in the general stagnation that has overtaken the market. Of the remainder on the list Best & Belcher sold to-day for $1.25; Cholar for 45c.; Gould & Curry for 80c.; Hale & Norcross for 75c., and Savage for $1.10.

The Gold Hill and South End stocks have, as for some weeks past, come in at the tail end of the trading, the only stock that has received any attention having been Belcher, that sold to-day for 80c at the opening, closing in the afternoon at 95c. The most important of the list closed as follows: Bullion, 55c; Caledonia, 10c.; Challenge Consolidated, 40c.; Confidence, $1.75; Consolidated New York, 35c.; Crown Point, 65c; Exchequer, 5c.; Justice, 5c.; Kentuck, 10c.; Lady Washington, 5c.; Occidental, 10c.; Overman, 10c.; Seg. Belcher, 5c.; and Yellow Jacket for 60c. Many of these quotations show a very considerable shrinkage in the week's trading.

In the Bodie group Bulwer has sold for 20c. Next week the Kinkead mill will be running, and as some good ore has been found in the south drift, 200 level, this stock has sold quietly. Bodie Consolidated at 20c. and Mono at 15c. have barely been quoted.

Of the Tuscaroras, Belle Isle, Commonwealth, Navajo, North Belle Isle and North Commonwealth were held for 10c. and Del Monte sold for 5c.

In the Quijotoa group Peer sold for 5c. and Peerless for the same amount.

Of the outside stocks, May Flower has been in steady demand, ruling at $1.25, and Eureka Consolidated at $1.50.

SAN FRANCISCO, February 3d (*By telegraph*).—The following are the opening quotations to-day: Best & Belcher, $1.35; Bodie, 15c.; Belle Isle, 10c.; Bulwer, 15c.; Chollar, 70c.; Eureka Consolidated, $1.50; Gould & Curry, 90c.; Hale & Norcross, 75c.; Mexican, $1.50; Mono, 20c.; North Belle Isle, 10c.; Navajo, 5c.; Ophir, $1.75; Savage, $1.15; Sierra Nevada, $1.30; Union Consolidated, 95c.; Yellow Jacket, 75c.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of sale.	Amt. per share.
Alpha Cons., Nev...	10	Dec. 20	Jan. 24	Feb. 14	.10
Andes, Nev	39	Jan. 21	Feb 24	Mar. 16	.25
Belle Isle, Nev.....	17	Jan. 9	Feb. 14	Mar. 8	.10
Best & Belcher, Nev.	53	Jan. 16	Feb. 21	Mar. 14	.25
Confidence, Nev...	.	Dec. 13	Jan. 21	Feb. 10	.50
Con. Cal. & Va., Nev	34	Nov. 22	Jan. 18	Feb. 8	.03
Con. Imperial, Nev.	59	Dec. 20	Jan. 24	Feb. 14	.25
Crown Point, Nev.	59	Dec. 20	Jan. 24	Feb. 14	.25
Exchequer, Nev..	35	Jan. 26	Mar. 1	Mar. 22	.10
Gold Mountain, Cal.	4	Dec. 21	Jan. 28	Feb. 15	2.00
Gray Eagle, Cal....	70	Dec. 15	Feb. 6	Mar. 2	.07
Hale & Norcross, Nev.....	103	Jan. 7	Feb. 10	Mar. 3	.50
Jack Rabbit, Cal.	2	Dec. 29	Feb. 6	Feb. 28	.05
Justice, Nev.....	53	Jan. 6	Feb. 9	Mar. 2	.10
Navajo, Nev	24	Jan. 9	Feb. 13	Mar. 7	.10
Nevada Queen, Nev	53	Jan. 16	Feb. 21	Mar. 14	.25
North Belle Isle, Nev.....	22	Jan. 26	Mar. 3	Apr. 3	.10
North Commonwealth, Nev.	4	Jan. 24	Mar. 2	Mar. 7	.10
Overman, Nev.	66	Jan. 10	Feb. 14	Mar. 30	.25
Seg. Belcher & Mides, Nev.....	11	Jan. 8	Feb. 7	Feb. 27	.25
Siskiyou Con., Cal.	5	Dec. 16	Jan. 20	Feb. 10	.01
South Eureka, Cal..	2	Jan. 4	Feb. 10	Mar. 6	.02
Utah Con., Nev....	16	Dec. 13	Jan. 19	Feb. 9	.10
West Con. C. & Va., Nev.....	1	Jan. 19	Feb. 23	Mar. 15	.25
Yellow Jacket, Nev.	53	.....	Jan. 6	Feb. 14	.30

MEETINGS.

Clay County Mining and Milling Company, at the office of the company, No 619-620 Mining Exchange Building, Denver, Colo., February 13th, at 2 P. M.

Cibolo Creek Mining and Milling Company, at the office of the company, Room 33, Nevada Block, No. 309 Montgomery street, San Francisco, Cal., February 6th, at 12 o clock noon.

Copper Queen Consolidated Mining Company, at the office of the company, No. 99 John street, New York City, February 14th, at 12 o'clock noon.

Gettysburg Mining Company, at the office of the company, Room 811, People's Bank Building, Denver, Colo., February 7th, at 7:30 P. M.

Lehigh & Wilkes-Barre Coal Company, at the office of the company, No. 226 South Third street, Philadelphia, Pa., February 23d, at 12 o'clock noon.

Maryland Coal Company, at the office of the company, No. 35 Broadway, New York City, February 7th, at 11 A. M.

Sulphur Bank Quicksilver Mining Company, at the office of the company, No. 306 California street, San Francisco, Cal., February 6th, at 12 o'clock noon.

Watt Blue Gravel Mining Company, at the office of the company, No. 323 Montgomery street, San Francisco, Cal., February 20th, at 1 P. M.

DIVIDENDS.

Trinity River Hydraulic Gold Mining Company, dividend No. 1, of one half a cent per share, $2,500, payable February 15th at the office of the company in Denver, Colo. Transfer books close February 10th and reopen February 15th.

METAL MARKET.

NEW YORK, Friday Evening, Feb. 3, 1893.

Prices of Silver per Ounce Troy.

Jan.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.	Feb.	Sterling Exchange.	London Pence.	N. Y. Cents.	Value of sil. in $1.
28	4 87	38 7/8	83¾	·638	1	4·86¾	38⅜	83⅜	·635
30	4·86¾	38 7/8	83½	·636	2	4·86¾	38¼	83¼	·634
31	4·86¾	38 7/8	83½	·636	3	4·87¾	38¼	83¼	·634

The silver market has been quiet, and no developments showing a pronounced tendency in either direction have manifested themselves. Supplies, although not so large as during the past fall and early winter months, are still coming forward in liberal amounts.

The United States Assay Office at New York reports the total receipts of silver for the week to be 93,000 ounces.

Mr. H. W. Cannon, a delegate to the Brussel's International Conference, when seen by a representative of the ENGINEERING AND MINING JOURNAL said: The silver conference, from my standpoint, has been a success. The information which our country will gain from the discussions which took place will more than repay us for our efforts. It is clear from what has transpired at the conference that there is more or less discomfort in Europe because of the demonetization of silver, because of the decrease in price as compared with gold, or, as some put it, the increase in the price of gold as compared with the price of silver and commodites. It was clearly brought out at the conference that England, because of its large holding of silver through its dependency—India—will be glad to take some steps looking to the monetization of silver. Owing to the fact, however, that England is a large receiving nation, she is not ready to indorse bimetallism, but, from present indications, the subject will take precedence over most public matters in the near future, both in their politics and Parliament. Many people in Lombard street think that England should use silver as a basis for money in some way or other.

The use made of money in the United States by the issuance of certificates against it and against the purchases of silver bullion at market price has attracted great interest throughout the world, and several schemes were suggested and referred to a committee of the conference looking to the use of certificates based upon silver as money, and if a meeting shall be held May 30th next, these various plans will undoubtedly be considered. The suggestion of Mr. R. P. Rothwell, through the ENGINEERING AND MINING JOURNAL, was presented to several members of the conference as individuals as well as a number of other plans. While, theoretically, his plan "to issue international certificates redeemable in gold or silver at holders' option, for the gold and silver purchased" has merit I do not think it is feasible, owing to the complex monetary systems of Europe, which would render the adoption of the plan difficult. In order to use this plan the charters of the great government banks of Europe would have to be altered, and, from my observation it would be exceedingly difficult to arrange for the alteration of long established business methods of the older banks.

Q.—Do you think that the ratio that should be adopted should be based upon the relative cost price of producing silver and gold or upon the relative quantities produced.

A.—I do not think it should. It is obvious that the relative cost price in the production of gold and silver varies from year to year and from decade to decade, and, furthermore, the amount of silver and gold produced each year, when compared with the amount of gold and silver in use as money and in existence in the world, is so small that it would be manifestly improper to take the production of any one year or any five years to form the basis of a ratio.

Q.—If the average cost price of producing silver in the United States, which during last year was about 60,000,000 oz. was in the neighborhood of 65 to 75 cents per oz., do you think that because it was produced so cheaply it should influence the ratio?

A.—While it may have some influence on the ratio I do not think such influence would be sufficient to govern the ratio.

[Mr. Cannon seems to be under a misapprehension as to the plan proposed by us. It calls for no change in the national monetary systems, neither would it interfere with the charters of government banks. Our banks don't lose their independence when they enter the clearing house. Mr. Cannon's opinion that the cost of production or the proportion in which the two metals are produced would or should affect their coinage ratio scarcely calls for comment. If the cost of producing silver should decline to that of nickel and that silver were produced by the ton insteak of the ounce Mr. Cannon would scarcely maintain that the coinage ratio should or could be maintained.—ED. E. & M. J.]

Government Silver Purchases.

The government has purchased during the week the following quantities of fine silver at the accompanying prices per fine ounce:

February 1st, 512,000 oz., at 83·8c.
February 3d, 539,000 oz., at ·836@·837.

Coinage in January.

According to the Director of the United States Mint the coinage during January was as follows: Gold, 171,000 pieces, value $3,180,000; silver, 2,024.000 pieces, value $1,264,000; minor, 5,462,000 pieces, value $87,900; total coinage, 7,657,000 pieces, value $4,531,900. Among the silver coins were 730,000 standard dollars and 864,000 Columbian half dollars.

Gold and Silver Exports and Imports at New York for Week Ending January 28th, 1893, and for Years from January 1st, 1893, 1892.

	Gold.		Silver.		Excess of Exports.
	Exports.	Imports.	Exports.	Imports.	
Week....	$4,236,000	$37,420	$798,350	$35,515	$4,961,415
1893.....	10,735,895	83,260	2,493 784	75,285	12,061,234
1892.....	129,372	389,904	1,818,832	106,242	1,482,058

During the week ending February 4th, the exports and imports, so far as ascertained, have been as follows: Exports, gold, $1,502.000: silver, $402,950. Imports, gold, $19.504; silver, $3,276. Of the gold exported $1,500,000 went to Bremen. The silver, of which $347,050 was American bullion, went to England.

NOTES OF THE WEEK.

The large gold exports of January are unprecedented since 1880. The largest amount exported in any month of January was $2,581.674 in January of 1886; for the month just passed it was over $13,000,000.

The free gold in the United States Treasury has reached the lowest point in years, being $108.181,713 on February 2d., a loss of $13,084.950 since January 1st. Much alarm is felt over the situation, which as yet shows no sign of amelioration, and it is reported that Mr. Cleveland has urged upon Speaker Crisp the necessity of passing the Andrews-Cate bill repealing the Sherman Act of 1890.

A recent canvass of the House showed that 104 were in favor of a total repeal of the Sherman Act; 44 opposed to repeal; 32 in favor of returning to the Bland Act; 9 who favor the Bland Act with a minimum coinage of $4,000,000 per month; 36 favor a compromise and 5 favor leaving the matter to the next Congress.

In the Senate opposition to the repeal continues to be strong, and it is reported that Senator Sherman himself has said that it will be impossible to repeal the bill at this session.

Domestic and Foreign Coin.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars	$.65½	$ 66
Peruvian soles and Chilian pesos	.60	.61
Victoria sovereigns	4.85	4.88
Twenty francs	3.85	3.88
Twenty marks	4 74	4.78
Spanish 25 pesetas	4.78	4.81

Copper.—Although business is still rather quiet, there has been somewhat more inquiry during the last few days, and some sales of lake copper have been made at about 12.10@12½. for February-March delivery. At these prices the large companies are not in the market, and it is reported that the C. & H. will not sell below 12½ cents, but consumers do not find any difficulty in providing their wants at the above prices. For casting copper, a fair demand exists at 11⅝@11½, as also for Arizona pig copper for home trade, as well as for export, but the stiff prices asked prevent a larger business. Some transactions are reported at about 10 cents. The exports of copper have been rather smaller lately. A large consignment of Anaconda copper matte has been shipped from Baltimore, per "Rossmore," and it is reported that this is the last Anaconda matte which will be exported, it being in future treated by the electrolytic process in this country. The London market was dull and declining until the middle of the week, when £45 was reached for spot G. M. B. copper. When statistics became known a firmer tone set in, and prices quickly advanced to £46 for spot and £46 10s. for three months. According to our cable, the statistics have increased for the second half of January 2,700 tons, and this includes corrected French stocks. Strange to say, in France, an old lot of about 3,500 tons casting copper has been unearthed, which still exists from the syndicate time, and which was overlooked hitherto, so that actually the visible supplies in Europe show a decrease of 700 tons, which is looked upon very favorably indeed, considering the heavy shipments from this side lately.

The exports of copper from the port of New York during the past week were as follows:

To Liverpool—	Copper Matte.			
S. S. Naronic	3,515	bags	403,330	$18,000
" Umbria	1,819	"	201,822	9,000
" Aurania	2,202	"	246.243	10,000
To Liverpool—	Copper.			
S. S. Aurania	17 bbls.		14,900	$1,407
To Havre—	Copper.			
S. S. Regina	802 bars.		223,944	$23,900
" "	268 pigs.		104,666	10,000
" La Normandie	796 bars.		221,369	23 000
" " "	541 pigs.		194,318	19,000
To Havre—	Copper Matte.			
S. S. La Normandie	228 bbls.			$16,315

Tin.—A large and active business has been done from day to day, and the transactions on the Metal Exchange amounted to over 1,000 tons for the week. The demand from consumers is very good for spot as well as distant deliveries. The closing prices are: Spot, 20½; March, 20¾; April, 20½. In London the market was somewhat irregular, but prices are fairly maintained, and are closing, spot, £91 15s. @ 17s. 6d., and £92 7s. 6d. @ 10d. for three months. Shipments from the East for January have been rather large, but it is not supposed that they will continue at the same rate.

Lead is very firm, and sellers have raised their ideas somewhat. We have to quote 4·92½@4·95, but at these prices there are only buyers of moderate quantities. In London, the market has given way again, and Spanish lead is quoted at £9 12s. 6d. @15s, with English lead two sixths higher. In spite of this low price there are quite free sellers.

Chicago Lead Market.—The Post, Boynton, Strong Company telegraphs us as follows: "The market is very much stronger with 3·72½c. bid and 3·75c. asked. The general trade is improving and the consumers are coming into the market freely."

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: "Lead still advancing. Last sales are at 3·70c. The under current is very strong, and whilst we cannot report heavy transactions at the late elevated prices, we must say very little metal is to be had below 3·70c.'

Spelter is dull and sales have been made at 4·25@4·37½. The production in the West proves to be rather large. The market in England is lower, and good ordinary brands are quoted in London at £17 6s. 3d., special £17 10s.

Antimony is rather depressed. We have to quote Cookson's at 11c., L. X. at 10½, Hallett's at 10⅛@10¼.

Nickel remains unchanged at 48@52c., with hardly any business doing.

Quicksilver.—There is no change to report of this market. It continues very quiet, and quotations are as last reported: New York. $37.50, London, £6 5s.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Feb. 3, 1893.

Pig Iron Production.—The following table gives the number of furnaces in blast and the estimated production of pig iron in the United States during the week ending January 28th, 1892, and for the corresponding week ending January 28th, 1893. Also the total estimated production from January 1st of each year to these dates. The figures are in gross tons:

Pig Iron Production During Weeks Ending January 28th, 1892, and January 28th, 1893, and During Both Years to These Dates.

Fuel used.	Week ending Jan. 28, 1892.		Week ending Jan. 28, 1893.		From Jan., 92.	From Jan., '93.
	F'cs.	Tons.	F'cs.	Tons.	Tons.	Tons.
Anthracite.	94	38,970	70	32,600	155,880	130,400
Coke.	164	138,990	137	131,600	555,960	526,400
Charcoal...	55	11,820	39	8,900	47,280	35,600
Totals....	313	189,780	246	173,100	759,120	692,400

The decrease in production, as compared with the corresponding period of last year, is approximately 66,000 tons, but prices have not responded. Reports from other parts of the country indicate that it will be some time before anything define can be known as to the suspected decline. While we see nothing at present that can be taken as an indication of the decline that is said to be on its way hither, still we are not disposed to go on record as saying that it will or will not occur. We simply don't know anything about the schedule time of the decline or the advance, and so can wait at the station until the train announces itself.

We are like the fellow who sees the station master chalk up a train "15 minutes late," and who manages to get through that "bad quarter of an hour" only to see him rub out the "minutes" and write "hours." Whereupon the sadly disappointed traveler returns to the hotel, and after the 15 hours reappears to hear either that no one knows when the train is coming or that it came in 14 hours late and he was left.

Every one can apply this parable to suit himself.

Prices: Southern, ex-steamer No. 1 F., $15.26; No. 2 F., $14.26; No. 3 F., $13.76; Gray Forge, $13.01. Northern, tide-water, No. 1 X, $15; No. 2 X, $14; No. 2 plain, $13.50; Gray Forge, $13. Southern irons are quoted, nominally, 26c. higher than Northern.

Spiegeleisen and Ferromanganese.—Ferro, $57 @$57.50. Spiegel, $26.50.

Steel Rails.—The tone of the market has improved, but quotations are still $29.

Rail Fastenings.—Prices rule as follows: Fish and angle plates, 1·55@1·65c. at mill; spikes, 1·90@2c.; bolts and square nuts, 2·40@2·70c.; hexagonal nuts, 2·70@2·80c. delivered.

Merchant Iron and Steel.—Prices stand: Mushet's special, 48c.; English tool steel, 15c. net, American tool steel, 6½@7½c.; special grades, 13@18c.; crucible machinery steel, 4·75c.; crucible spring, 3·75c.; open hearth machinery, 2·25c.; open hearth spring, 2·30c.; tire steel, 2·25c.; toe calks, 2·25@2·50c.; first quality sheet, 10c.; second quality sheet, 8c.

Structural Iron and Steel.—We quote: Beams, 2·3@2·55c., except for 20-in. beams which are 2·75c.; angles, 1·95@2·15c.; sheared plates, 1·90@2·10c; tees, 2·30@2·60c.; channels, 2·35@2·50c.; universal plates, 2@2·10c.; bridge plates, 2@2·10c.; steel hoops, 1·90@8c. All on dock.

Chicago. Feb. 2.

(From our Special Correspondent.)

Not only are values low on crude and manufactured material, but they are irregular also, and this unfavorable condition does not in any way tend to stimulate the market. Local pig iron producers now claim that bottom has been reached and the margin lines of profit are too closely near to cost to permit of any further recession. Southern furnace men are becoming anxious for business, and offers of the cheaper grades are now being made by some of them at as low prices as ever made in this market for prompt shipment and cash. This had caused some consumers to withdraw inquiries, but on the other hand a few of the furnaces have declined to entertain offers made them at less than which they consider a fair market value. There is little demand for pig iron of any kind in large quantities. The situation is very similar in regard to bars, and figures made by some Ohio mills, though the lowest on record, fail to catch business so that it is really hard to determine how low prices will go. Some mill men incline to the opinion that it may and probably will lead to the breaking up of the Amalgamated Association, as there is nothing in finished iron at present price paid for puddling iron.

Pig Iron.—Coke iron during the past week has been in very moderate demand. Several medium sized orders have been placed, but the general run has been for small amounts for quick delivery. There is evidently developing among consumers a disposition to confine orders to actual requirements, instead of purchasing for long deliveries. A fair amount of business is pending, and if buyers can be persuaded that bottom has been reached some may be closed within the week. Southern iron is pressing for sale, and several furnaces have made absurdly low prices on the cheaper grades of coke, resulting in driving the customer off. A good tonnage could be disposed of if quotations were less irregular. Lake Superior charcoal iron holds up well, and among a number of small purchases we note one of 250 tons at $17.25 for malleables. February should be a more active month than January.

Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $16.07@$17.25; Lake Superior coke, No. 1, $13.75@$14.25; No. 2, $13.25@$13.75; No. 3, $13.25@$13; Lake Superior Bessemer, $14.50; Lake Superior Scotch, $14.25@$14 75; American Scotch, $16.25@$17; Southern coke, foundry, No. 1, $14.50; No. 2, $13.35; No. 3, $13.00; Southern coke, soft, No. 1, $13.35; No. 2, $13.00; Ohio silveries, No. 1, $17; No. 2, $16.50; Ohio strong softeners, No. 1, $17; No. 2, $16.25; Tennessee charcoal, No. 1, $17; No. 2, $16.50; Southern standard car wheel, $20@$21.

Steel Billets and Rods.—Quotations on these specialties are nominal at $23.50 for billets and $32.50 for rods.

Structural Iron and Steel.—Several small lots were given out, one for 400 tons of beams for a hotel here and a lot of girder work. There is a fair inquiry and the outlook good. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, $2@$2.20; tees, $2.25@$2.35; universal plates, $1.95@$2; sheared plates, $1.95@$2; beams and channels, $2.15@2.25.

Plates.—Inquiries from the Pacific Slope are large for steel plate for hydraulic purposes—one from Tacoma for 7,800 tons, another from Portland, 6,500 tons, and a contract placed last week for 700 tons at equal to $1.90 Chicago. Local business is fair only and prices weak. Steel sheets, 10 to 14, $2.30@$2.40; iron sheets, 10 to 14, $2.20@$2.30; tank iron or steel, $1.90@$2; shell iron or steel, $2·50@$2.75; firebox steel, $4.25@$5.50; flange steel, $2.75@$3; boiler rivets, $4@$4.15; boiler tubes, all sizes, 60%.

Merchant Steel.—Several manufacturers' agents have been obliged to refuse quotations on material for quick delivery owing to the unfilled business now on their order books. Specifications on old contracts are coming in lively. Tool steel is seasonably quiet. Quotations are: Tool steel, $6.50@$6.75 and upward; tire steel, $2@$2.10; toe calk, $2.30@$2.40. Bessemer machinery, $2.10@$2.20; Bessemer bars, $1.70@$1.75; open hearth machinery, $2.30@$2.40; open hearth carriage spring, $2.10@$2.20; crucible spring, $3.75@$4.

Galvanized Sheet Iron.—Stocks in agents' warehouses are in good shape, but business is rather quiet. Discounts are easy at 70% and 10% off on Juniata and 70 and 15% off on charcoal, and jobbing quantities at 70 and 5% off on the former and 70 and 10% off on the latter.

Black Sheet Iron.—Some contracts for roofing and corrugated sheets were placed last week beyond this. There is little doing. Quotations on iron sheets are 2·85c. for No. 27, common; steel sheets are 2·95c. Jobbers quote 3@3·10c. for iron and 3·10@3·05c. for steel, same gauge.

Bar Iron.—Inquiries are mostly from small manufacturing concerns and car builders. We note one for 2,000 tons from an implement maker, and the competition is so keen that prices are irregular and very low, 1·52½@1·55, with half extras. Jobbers quote 1·70@1·75, and business fair only.

Steel Rails.—Inquiry is fair for ordinary quantities from 500 to 1,000 tons, but no large orders were placed during the week, although several are under consideration. Regular quotations are $30@$32, according to quantity. Railroad fastenings are quiet at 1·65@1·70c. for iron and steel splice bars; track bolts, square nuts, 2·5?c.; hexagon, 2·65c.; spikes, 2·05@2·10c, according to style.

Nails.—Several of the eastern mills have stiffened upon wire nails, and carloads are now quoted at $1.52½@$1.55 base Chicago, but business is light. Jobbers quote $1.65 from stock. Steel cut nails are in moderate demand at $1.60, 30c. average Chicago; jobbing trade quiet at $1.65 from store.

Scrap.—Demand has somewhat increased but it is irregular and of insufficient volume to affect values: railroad, $15.50; No. 1 forge, $15; No. 1 mill, $9.59; fish plates, $16.50; axles, $19; horseshoe, $16; pipes and flues, $7; cast boring, $6; wrought turnings, $8; axle turnings, $9.50; machinery castings, $10; stove plates, $6.50; mixed steel, $10.50; coil steel, $15; leaf steel, $15.50; tires, $14.50.

Old Material.—Offerings of iron rails are light and holders apparently able to sustain prices, as 1,000 tons were sold to a nearby mill at $19 delivered, equal to $18.75 Chicago. Steel rails continue quiet and prices easy at $11.25 for short and $13.50 for selected long lengths. Car wheels are dull and small lots change hands at $14.50.

Louisville. Jan. 28.

(Special Report by Hall Bros. & Co.)

There is really nothing new to be said about the iron market. Offerings by the furnaces are probably a little more liberal than for some time in No. 1 and 2 foundry and soft grades, but prices remain about the same; if any different, they are a shade lower.

Hot Blast Foundry Irons.—Southern coke No. 1, $13.50@$13.75; Southern coke No. 2, $12.50@$12.75; Southern coke No. 3, $12@$12 25; Southern charcoal No. 1, $16@$17; Southern charcoal No. 2, $15.50@$16.

Forge Irons.—Neutral coke, $11.50@$12; mottled, $11@$11.25.

Car Wheel and Malleable Irons.—Southern (standard brands), $20@$21; Southern (other brands), $18.50@$19.50; Lake Superior, $19.50@$20.50.

Philadelphia. Feb. 2.

(From our Special Correspondent.)

Pig Iron.—The rumors interested parties are trying to start concerning a break in prices cannot be proven by makers or brokers representing them. The only nervousness arises from the probability of an increased production before there is an actual demand for it. Makers are admittedly anxious to secure long contracts, especially those who have iron a little under the best, and this has a weakening effect, though there has been no absolute drop in prices. No. 1 is $15; No. 2, $14 50, and mill $13; Bessemer, $15.50.

Muck Bars.—Efforts to make sales this week fell through. Quotations, $23, $23.50.

Steel Billets.—A general improvement in demand is on, but small lots are selling at $23.75@$24 25.

Merchant Iron.—The weather is favorable to a larger movement in bars, but there is nothing to boast of. Prices 1·60@1·75.

Nails.—Some active canvassing is being done in the nail trade, with the promise of an active movement at prices altogether in favor of buyers.

Skelp.—The large buyers are ready to place orders at $1.50 and are confident they will have their orders soon taken at that figure.

Sheet Iron.—The previous favorable conditions continue and proprietors are encouraged to name stronger figures on some of the early deliveries. The sheet mill owners are in sight of a good business.

Plate and Tank.—Large shipbuilding orders have been placed in both eastern and western Pennsylvania mills this week, besides an unusual run of small orders for warehouse, railroad and general work, which makes the week an exceptional one. Competition is intense, even on some of the small orders. The ordinary quotations are 1·80 for tank, 2·70 for iron flange.

Structural Material.—A fair week's business has been done and one or two large orders are about being placed for large quantities. Competition is so sharp that it rather restricts business. Beams, tees and channels 2 cents.

Steel Rails.—The week has been a good one and several large orders it is believed will now follow the Pennsylvania order. Various conjectures have arisen as to what may follow, some going so far as to anticipate a general buying by railroad companies, to lay as much track as it has been decided shall be laid. Quotations, $29.

Old Rails.—Quite a business is being done in old iron rails, especially at $18 to $18.50.

Scrap.—A good deal of scrap is coming in and is sold at $16 to $16.50.

Pittsburg. Feb. 2.

(From our Special Correspondent.

Raw Iron and Steel.—Trade continues to move along slowly. The only difference compared with the preceding week was a larger inquiry; even this is looked upon as encouraging. There is the old complaint that prices are unsatisfactory. The fact is very evident—the iron and steel business has been overdone. Production has exceeded the utmost capacity of the country to consume or absorb, and the consequence has come in the shape of a disciplinary process the first effect of which has been to lower margins, through a recklessly bitter competition. What is to be done? Nothing but to practice patience and keep things humming until the ranks are thinned out; inaction or half motion will not do, because the profits are in tonnage, not in quality, and the small concerns will have to content themselves with whatever nourishment they can extract from the posterior nipples. Quite a number are preparing to withdraw from action, and some have already done so, and in the natural order a change will be effected in the near future. Let us glance at the figures one year ago and compare them with those that rule to-day. Bessemer pig, February 3d, 1892, sold at $15.25@$15 60; present prices, $13.20@$13.40, decline, $2.05@$2.20. Grey forge, same date, $13.30@$13.35; to-day's prices, $12 25; decline, $1.05 per ton. It will be perceived that Grey forge then sold at the Bessemer figures of to day. Steel billets and slabs one year ago, $24.50@$25.00; to-day's prices are $21.50@$21.75; decline, $3@$3 25 per ton. The figures furnished above are neither the asking nor offering prices; they are taken from actual sales then and now. One thing is very evident; the present condition of affairs in the iron and steel trade will have to undergo a change. Better prices must come to the front in a short time or there will be a large decrease in production, as it does not seem possible for business to be continued much longer at present prices. An Eastern iron man has this to say: The Cramps of Philadelphia have given out the contracts for the iron and steel plates and shapes required for the new war vessels. The whole aggregates about 11,000 tons. The specification calls for the frames, deck beams, boiler plates and general deck and hull plates, the material being of open hearth steel, part with and part without nickel. The shapes, amounting to between 3,000 and 4,000 tons, will be rolled by the Phœnix Iron Company, but the plates will be made by the Carbon Iron Company of Pittsburg. The contracts for the Atlantic liners, which will call for about 20,000 tons of metal, have not yet been given out, but it is likely that the giving out of this work will not be much longer deferred.

Structural Material.—The market for shapes shows no particular change. As is usual at this season of the year, a better demand is looked for as soon as the weather becomes more settled.

Steel Rails.—Prices are reported lower, viz., $28@$28.50 f. o. b. at maker's mill. These prices ought bring trade, and no doubt will.

Coke Smelted Lake and Native Ore.

5,000	Tons Bessemer, Feb., March, April	$13.15 cash.
2,000	Tons Bessemer, Feb, March	13.20 cash.
2,000	Tons Bessemer, March, April, May	13.25 cash.
2,000	Tons Bessemer, Feb., March	13.30 cash.
1,500	Tons Bessemer, Feb, March	13.40 cash.
1,000	Tons Bessemer, City Furnace	13 40 cash.
1,000	Tons Grey Forge, March, April	12 25 cash.
1,000	Tons Grey Forge, Feb., March, April	12.25 cash.
600	Tons Grey Forge, Prompt	12.25 cash.
500	Tons Grey Forge Feb	12.25 cash.
500	Tons Grey Forge, all ore	12.75 cash.
500	Tons No. 1 Foundry	14.00 cash.
500	Tons Grey Forge, all ore	12.50 cash.
200	Tons No. 1 Foundry	14.25 cash.
200	Tons No. 2 Foundry	13.25 cash.
100	Tons No. 1 Silvery	16.25 cash.
100	Tons No. 2 Silvery	15.10 cash.
100	Tons Open Mill	12.75 cash.

Charcoal.

150	Tons Warm Blast	18.00 cash.
100	Tons No. 1 Cold Blast	26.50 cash.
100	Tons No. 2 Cold Blast	26 50 cash.
100	Tons No. 2 Foundry	19.00 cash.
75	Tons No. 6 Cold Blast	26.50 cash.
50	Tons No. 5 Cold Blast	26 50 cash.

Blooms, Billets and Slabs.

2,000	Tons Billets and Slabs, at mill	21.50 cash.
1,500	Tons Billets, Feb. March, and April at mill	21.60 cash.
1,500	Tons Billets and Slabs, Feb.-March, at mill	21.40 cash.
1,000	Tons Billets, next 3 mos., at mill	21.40 cash.
600	Tons Billets, spot, at mill	21.75 cash.
500	Tons Slabs, March, April and May at mill	21.50 cash.

Muck Bar.

500	Tons Neutral	24.30 cash.
400	Tons Neutral	24.25 cash.
300	Tons Neutral	24.25 cash
250	Tons Neutral	24.25 cash.

Ferro-Manganese.

240	Tons 80%, delivered	58.60 cash.

Iron Skelp.

600	Tons Sheared Iron	1.72½ 4 m.
400	Tons Narrow Grooved	1.52½ 4 m.
300	Tons Wide Grooved	1.52½ 4 m

Steel Skelp.

400	Tons Wide Grooved	1.42½ 4 m.

Steel Wire Rods, Five gauge, American.

875	Tons 5-gauge American, at mill	29.40 cash.
800	Tons 5 gauge American, at mill	30.00 cash.

Sheet Bars.

500	Tons Sheet Bars at mill	27.50 cash.

Blooms, Billets and Rail Ends.

380	Tons Bloom and Billet Ends	15.25 cash.
200	Tons Bloom and Billet Ends	15.25 cash.

Scrap Material.

450	Tons No. 1 R. R. W. Scrap, net	16.00 cash.
300	Tons Cast Boring, gross	8.00 cash.
250	Tons Cut Pipe and Tank, net	13.00 cash.
100	Tons Cast Steel Scrap, gross	11.75 cash.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Feb. 3d.

PRODUCTION OF BITUMINOUS COAL for week ending January 28th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1893. Week.	1893. Year.	1892. Year.
Phila. & Erie R. R.	2,356	9,947	6,5 6
Cumberland, Md.	60,608	222,964	26 9 2
Barclay, Pa.	1,727	6,707	21,384
Broad Top, Pa.	16,128	60,019	49,949
Clearfield, Pa.	75,773	285 703	309,001
Allegheny, Pa.	17,347	67,765	90,372
Beach Creek, Pa.	34,172	131,942	189,408
Pocahontas Flat Top	52,964	169,143	206,555
Kanawha, W. Va.	55,024	243,727	140,141
Total	316,099	1,197,917	1,282,558

WESTERN SHIPMENTS.

	1893. Week.	1893. Year.	1892 Year.
Pittsburg, Pa.	26,770	99,122	120,588
Westmoreland, Pa	38,963	133,715	144,602
Monongahela, Pa	22,177	61,940	37,365
Totals	87,990	294,777	302,555
Grand totals	403,989	1,492,694	1,585,113

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending January 28th, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 121,697 tons; year 413 754 tons; to corresponding date in 1892, 487,127 tons.

Anthracite.

There are two important features of the trade this week. The first is the decision of Judge Metzger, of Lycoming County, in the Arnot suit, and the second is the report of State Senator McMahon to the New York Legislature.

Several months ago Mathias Arnot, of Pennsylvania, brought suit against the Philadelphia & Reading Railroad, alleging that in its contract of February 11th, 1892, with the Lehigh Valley Railroad, by which a lease for 999 years was effected, it had violated section 4, article XVII. of the Constitution of the State. This section forbids the ownership or control by a railroad, canal or other corporation or by its lessees of any parallel or competing line, and the suit was to determine whether or no the Philadelphia & Reading and the Lehigh Valley were parallel or competing lines in the sense of the statute. The case had been tried before the Master, W. W. Hart, and Judge Metzger merely passed upon his report. The decision sustained the Master, and was in favor of the railroad company. So far, therefore, as concerns these two decisions the lease is legal and will stand. The Philadelphia & Reading and the Lehigh Valley are declared not to be competing or parallel lines in the meaning of the law. The Judge holds: "Mere parallelism of two lines of railroad without any competition or any possibility of competition between them, we think would not be construed to be in violation of this provision of the constitution. There would be no purpose in prohibiting the combination of such lines. We must, therefore, hold that the framers of the constitution intended by the word parallel to mean such lines as by reason of their location would make it not only possible but practicable for them to become competing lines of railroads. We have been unable to find any direct authority upon this subject, but have been referred to some authorities which incidentally bear upon this question, and which seem to sustain the view of the learned Master, that mere incidental competition which might arise by reason of branches or spurs to the main line of either consolidating company will not prevent the consolidation of such main lines. . . . Whether we regard this question of the parallelism of these lines as being a question of fact to be established by testimony, or a fact of which the Court will take official notice, is immaterial in this case. We can come to no other conclusion than that the lines of these two systems of railroads are not parallel within the meaning of the constitution.

"Are they competing lines? Competing lines of railroads, we think, are such as by reason of their location can collect traffic from the same transporters or shippers and convey it to the same point or destination. . . .

"Unless, therefore, the lines of railroad in controversy tap the same territory, that is, were furnishing traffic from the same portions of the State, they could not be in any sense competing within the meaning of the constitutional prohibition. The main lines of these railroads, as we have already observed, traverse different portions of the State, and between them large mountains and one or more counties intervene for the whole distance, and it is therefore rendered physically impossible for shippers along the line of either to be reached by the other for the purpose of transportation. While both roads were engaged in the carrying of anthracite coal from the regions of Pennsylvania, the main lines of the Philadelphia & Reading Railroad and the Lehigh Valley did not reach the same collieries in the same territory. There was, therefore, no competition between the main lines of these two systems of railroad."

We must express our amazement and dissent from this curious opinion. It seems to us that the intention of the framers of the constitution was to prevent the very thing that Judge Metzger says they allow, viz., combination between roads which are or may be competitors for the same traffic. It could not reasonably have been their intention to limit the operation of the constitution to the main lines of such roads, leaving them free to construct branch lines which, while rendering competition possible, in fact would render them irresponsible to the law.

What has been the effect of the combination of these roads upon the anthracite trade? It has been to advance the price of coal, to cripple independent operators, and to put the control of the trade into the hands of the railroads: that is, most emphatically to destroy competition. We may take it for granted that such could not have been the intention of the framers of Section 4, Art. XVII, and any view of the case which tends to justify the overriding of the plain meaning of the section does violence to the spirit of the law. Main lines and branches, whether under different corporate titles or not, so long as under one administrative control, are a single line to all intents and purposes, and so long as two systems of roads take the coal from the anthracite fields of Pennsylvania and deliver it in "competitive markets' they, no matter what route they take to get them there, are for practical purposes "parallel and competing" roads.

Judge Metzger is quite right in saying hat the object of the framers of the constitution was to insure reasonable rates; but his decision will operate to allow just what he says the constitution was framed to forbid. The proof of the wisdom of the makers of the constitution is shown in their attempt to forbid what has really come to pass, viz., an unreasonable advance in the price of one of the great necessaries of life.

If this is to be permitted simply because the main lines of two roads are not mathematically parallel while their branch roads do tap the same territory and deliver the coal in the same markets we shall soon have need of a law defining main and branch lines.

We hope and believe that this decision will not stand. Senator Macmahon's report to the New York Legislature briefly reviews the testimony given before the committee of which he was chairman, and then says:

"The consolidation of railroad and coal producing companies herein described and known as the Reading Combination has created a substantial monopoly of anthracite coal in the management of the Philadelphia & Reading Railroad Company. The roads involved, which are the Delaware, Lackawanna & Western, the Lehigh Valley, the Central of New Jersey, the Philadelphia & Reading and the New England, are substantially parallel, and the mines controlled by them are the source of the largest supply, and were competitors in the coal business until this combination was formed. The most natural and obvious benefit to be derived by them from consolidation is an increase in the price of coal, which may be advanced to an unreasonable and extortionate rate. Since the combination was formed material advances in the price of coal have been made and others are threatened, and the combination is contrary to public policy and dangerous to the interests of the State and the welfare of the people."

The committee has recommended a bill to the Senate which, in our opinion, is extremely unwise. By a system of licenses known respectively as a coal carriers' license and a coal dealers' license it is proposed to regulate the prices at which anthracite coal is to be transported and sold. These prices are to be fixed by the Board of Railroad Commissioners, which is to have the right to examine the books of carrying companies, and wholesale and retail dealers The attempt to regulate such prices by legislation would create dangers still more formidable than those which now exist. The principle underlying this present anthracite combine, and which will underlie all combines of like nature, is the consolidation of interests that transport with those that mine. The inevitable squeezing of the independent element and of the consumer follows.

The fundamental principle of free government is to leave to private interests the management of all industrial pursuits under general laws which provide for the protection of the citizen. The State can prohibit (it has prohibited) combinations and, monopolies which have for their object the restriction of free competition and the undue advancement of prices. The State can ascertain the facts and, without attempting to prevent the evasion of the spirit of the law in this or that detail, it can leave to the companies the full liberty of action, provided the spirit of the law is observed. If the facts show that free competition has been destroyed, and that there is a practical monopoly in anthracite coal, which the law prohibits, the State can forfeit the charters of the corporations and can punish their officers who join in this practical monopoly and who no longer allow free competition. The final fact of a violation of the intent of the law is sufficient ground for the State to withdraw the rights which it has given. It is not necessary for the State to attempt to regulate prices by law. It is enough that it secures natural competition and freedom in trade, and this it can do very simply and effectively if its officers so desire.

The anthracite coal tonnage for 1891 and 1892 is given in the following table:

	1891.	1892.
Coxe Bros. & Co	43,882	1,210,187
Delaware & Hudson	3,939.917	4,058,526
Erie	1,204,271	1,388,852
Jersey Central	5,857,968	5,271,131
Lackawanna	6,198,048	6,529,649
Pennsylvania	4,994,507	5,571,320
Penn. Coal Co.	1,692,419	1,921,029
Reading & Lehigh	15,821,549	15,135,581
Total	40,448,333	41,893,316

According to this statement the Reading, Lehigh Valley and Jersey Central together lost 1,272,805 tons or 5·9% of their output in 1891, and 6·25% of their output of 1892. Taking the freight per ton at $1.90, the loss reaches $2,418,329. If we consider, further, that the highest price of Reading stock in February, 1892, at the time of the combine, was 65, and is now 53½, having reached 48¾ in January, and that the Delaware, Lackawanna & Western, Delaware & Hudson and Jersey Central have all shown a considerable decline, it begins to look as if the financial end of the combine was in need of repairs.

The Reading company has established a new classification of its coal, by which dealers can name the especial district from which they desire shipments. Under white ash there are grouped: Mahony, 17 collieries; Shenandoah, 8; Locust Mt., 14, and Schuylkill white ash, 6.

The special coals are classed as: Lykens Valley, 2 collieries; Lorberry, 3; Shamokin, 5, and Schuylkill red ash, 4.

From the average of $2.646 for coal sold in January the Schuylkill Coal Exchange has determined that the rate of wages until the middle of February shall be 5% above the $2.50 basis.

Bituminous.

The trade is in a better condition than it was a week ago, and there is now a good prospect of the resumption of shipments that have been hindered by the severe weather and lack of cars. It is thought that by the end of next week things will be moving along satisfactorily. The heavy accumulation of ice in the Delaware and Chesapeake bays is gradually passing down, and may be expected to be out of the way within a week.

Charter rates are nominal, and no reliable quotations can be given at this writing. There is very little interest in the Nova Scotia coal mines deal. The bill authorizing the sale of the lands has passed the Nova Scotia Legislature, in spite of the doubt that this body had no right to make this sale.

Advices from Nova Scotia under date of January 28th say that there is much surmising as to what properties the "deal" will include. Rumor says about *all*. The Cape Breton coal mines are to be absorbed, and possibly the Spring Hill mines, in the Cumberland field on the Bay of Fundy. It is said also that the Drummond & Acadia have been "sounded," and that the New Glasgow C. and I. and Ry. Co., in Pictou County, will go in.

This last, however, is doubtful. Even should the duty of 75c. per ton be taken off, and there is no probability of this within a year at least, this coal cannot seriously interfere with American coal. While we will probably have a repeal of the duty we are not apprehensive of any injury to American interests. It is true that Nova Scotia coal can compete in the market with inferior domestic coal, but there is so great a difference between this and our standard coals that they need fear no restriction of output, and it must not be forgotten that the cost of mining in the Nova Scotia mines is on the average very nearly double that in Maryland and Pennsylvania and more than double that at some West Virginia collieries.

Boston.

Feb. 2.

(From our Special Correspondent.)

The mild weather of the past two weeks has had its anticipated effects. The receipts of coal have increased, and prices have eased off considerably. The arrivals of steamers and barges loaded with anthracite have been sufficiently large to replenish retailers' stocks, so that now they are in fair condition, in comparison to what they were. The receipts, however, have not been heavy as yet, but it is expected that ere long the arrival of vessels will be quite free. Rate cutting has cropped out this week. It is understood that the Lehigh & Wilkes-Barre company are cutting prices on coal to counteract the greater prices they are obliged to pay on freight rates. Cuts have been made to the extent of 25c. per ton.

The prices quoted here are those f. o. b. net at New York: free burning coal, stove, $4.75; egg, $4.40; free broken, $4.00; chestnut, $4.65. Lykens Valley (at Philadelphia): broken, $4 85; egg, $5.45; stove, $6.00; chestnut, $5.00.

The relaxation in the stringency of the soft coal market has not been as great as in hard coal. Arrivals have been but moderate; and with such large gaps to fill as exist, it seems but small. Most of the manufacturing companies I noted a week or two ago as being short of coal have secured enough to ease their condition considerably. The arrival of coal at Providence, New Bedford and Boston has helped the Old Colony Railroad Company considerably, so that it is practically supplied to-day. The Boston & Albany R. R. Co. is also all right. The New York & New England R. R. Co. is still short. It is now reported that the Standard Sugar Refinery Company, of this city, which is the local branch of the trust, is short of coal, and has hardly sufficient to carry them going three days longer. The Pocahontas people, who are supplying the latter, will probably be able to supply them before their heap is exhausted. George's Creek coal on cars here is worth $6 per ton and Clearfield $5.50.

Freight rates are gradually declining and ere long will probably be back to their old level. The New York rates run anywhere from $.75 to $1.25; Philadelphia $1.75; Baltimore $2 asked; Newport News $1.25. About 30 vessels have been chartered to go to Newport News. There is still considerable delay in loading at Newport News and Norfolk. There is plenty of coal at Baltimore to ship.

In a retail way trade is fair, but not a circumstance to what it was two or three weeks ago

Prices are firmly held by retailers. Retail prices are: Stove, $7; nut, $7; egg, $6.75; furnace, $6.50; Franklin, $8.25; Lehigh egg, $7; Lehigh furnace, $6.75; bituminous, $4.25@$5. Wharf prices, 50c. less than the foregoing.

The receipts of coal at the port of Boston for the weeks ending January 28th were 17,287 tons of anthracite and 16,373 tons of bituminous, against 21,772 tons of anthracite and 9,402 tons of bituminous for the corresponding weeks last year. Since January 1st the receipts have been 67,553 tons anthracite and 49,438 tons bituminous, against 103,525 tons of anthracite and 36,817 tons bituminous for the same time last year.

Buffalo. Feb. 21.

(From our Special Correspondent.)

The anthracite coal trade continues active and market quotations unchanged. Glorious weather for the coal producers and dealers has prevailed in this section of New York State for six weeks and indications do not point to any let up.

Bituminous coal in good demand with a strong market based on small stocks and some difficulty in filling orders from delay in transportation. The range of prices may be quoted as low as $1.50 and as high as $2 35 per 2,000 lbs. in car lots on track, from slack to screened lump.

The representatives of the bituminous coal railroads tributary to Buffalo have fixed rates for 1893, and granted to the Buffalo, Rochester & Pittsburg, the Erie and the Western New York & Pennsylvania railroads a differential of 10c. a net ton against the Lake Shore Railroad. These railroad rates will be $1.20 to the International Bridge and $1.30 to the Suspension Bridge; the Lake Shore, $1.30 and $1.40, respectively. The latter rate was made for the Grand Trunk coal contract.

The meeting of bituminous coal producers held in Buffalo a few days since, referred to in last letter to the ENGINEERING AND MINING JOURNAL, will be continued in Montreal, February 8th, when all the prominent men will be present at the opening of its Grand Trunk bids for 635,000 net tons.

Doubtless you will refer to the indictment found against 18 of the Rochester coal men on January 26th for conspiring in illegally combining to advance the price of anthracite coal, so will not comment thereon.

Mr. W. N. Perrine, of this city, has been promoted from local freight agent to general traffic agent of the Erie Railroad, with offices in Buffalo. He will have charge of the coal docks as well as the elevators and general business.

Mr. Edgar Van Etten, the originator of the Car Service associations, has been appointed general superintendent of the New York Central Railroad.

Mr. E. G. Russell, who has been superintendent of the Illinois Central Railway, has been appointed to the superintendency of the Rome, Watertown & Ogdensburg Railroad, which was made vacant by the appointment of Edgar Van Etten to Mr Voorhees' place as general superintendent of the Central system.

Lake Erie is apparently covered for miles wide on each shore with solid ice from 1½ to 2 ft. thick. The present generation has never witnessed such unbroken fields.

Chicago. Feb. 2.

(From our Special Correspondent.)

Business in anthracite continues very good in all branches, the country trade and dealers still maintaining their policy for small but frequent orders and all shipping docks are only limited in their deliveries by supply of cars. All-rail coal is moving to Chicago more freely, and with a continuance of the severe weather almost any amount of shipments of all sizes can be readily disposed of at full prices. Some of the shippers have been obliged to refuse orders for all-rail coal, but the situation to-day is rather more easy, as Eastern railroads are doing much better with regard to handling this class of freight than they were two weeks ago. Several of the larger shippers (individual), docks and yards are already practically out of chestnut, and with a continuation of the present weather have only enough stove and egg sizes to last about two weeks, so that there dependance for future supply will be entirely on all-rail. Some of these same shippers have orders on their books two weeks old which are yet unfilled. All the larger as well as the smaller retail dealers report a steady demand which is only limited by their teaming facilities for daily deliveries. Large rail shippers have already made arrangements to put in their stocks here during this month and March on account of the prospective heavy passenger traffic during the World's Fair, as that will undoubtedly interfere very much with general freight business. Not a few of the jobbers are asking: "What about this new warehousing company in the East, and if it is proposed to make the storage docks and yards here answer the same purpose?" The ENGINEERING AND MINING JOURNAL makes a very pertinent statement when it says: "It may not be quite so good for the general public."

The enormous demand for bituminous coal from all sections is increasing and no operator or large dealer in the city can fill his orders with any degree of promptitude. The situation in a general way is less stringent than it was two weeks ago, when elevators in some of the large office buildings and several plants had to shut down. Nevertheless, a number of the public schools have been obliged to dismiss the scholars and several of the high school students have had an enforced vacation on account of the contractor being unable to furnish coal. The removal of the blockades on all the railroads and the receipt of all the coal that was side-tracked, together with the fact that so many thousands of empty cars were blocked on *this* side of the mines, have produced a phenomenal condition of affairs, and the little coal coming forward *as yet*, has been sold outside of its legitimate channels at prices far in excess of normal conditions. For instance, Illinois lump and some of the Indiana coals ordinarily selling at $1.60@$1.85 in this market have sold within the past week at $2.10@$2.25 per ton and in several instances at higher rates on track here in 15 to 50 carload lots. It will take a few days of unrestricted mining and prompt railroad terminal work to relieve in any degree the stringency still existing. The railroads are all promising better service, but with the exception of one of the coal carrying roads (C. & E. I.) none of the promises, so far as we can learn, have been carried out. Consumers are taking and using the coal, with few exceptions, as rapidly as it arrives in railroad yards. Most if not all of the smaller city dealers could use double the quantity of coal they are getting from operators and jobbers if they could obtain it, and many of them have orders placed with several firms.

On outside orders some of the operators are hundreds of cars behind. With rare exceptions none of the mines in the Northern Illinois coal field are running full time on account of inability to get empty cars. The supply is entirely of a hand-to-mouth character, so that a snowstorm or severe weather causes an immediate shortage which is felt on all sides.

Coke is now in better supply, but is by no means up to standard, and some foundries have run short. To-day "Connellsville" is coming in more freely. Crushed coke continues in very rair demand.

Quotations are: $4.65 furnace; $5.05 foundry, crushed; $5.40 Connellsville; West Virginia: $3.90, furnace, $4.10 foundry; New River foundry, $4.75; Walston: $4.65 furnace, $5 foundry.

Circular prices are at the following rates: Lehigh lump, $6.50; large egg, $5.85; small egg, range and chestnut, $6.10. Retail prices per ton are: Large egg, $7.25; small egg, range and chestnut, $7.25.

Prices of bituminous per ton of 2,000 lbs., f. o. b. Chicago, are: Pittsburg, $3.40; Hocking Valley, $3 20; Youghiogheny, $3.25: Illinois block, $2; Brazil block, $2.60@$2.75.

Pittsburg. Feb. 2.

(From our Special Correspondent.)

Coal.—For the first time in many years January passed without a coal shipment. In the first place we had no water; in the second place we had no coal, provided there had been water All the coal that accumulated don't reach 2,000,000 bushels. Navigation will be resumed to-day. The floods came and the ice passed out, doing no serious damage here; the ice in the ports was broken by powerful towboats rendering it in a manner harmless. Not so at Cincinnati and Louisville. Coal men at those points were large sufferers; Pittsburg coal men were sufferers to a considerable extent.

On the whole the outlook for the coal business is a glowing one; the coal men seem determined not to pay 3½c. for mining. A leading operator remarked: I will tell you one thing about the coal trade that you may not know, and that is if the river operators were to have their mines idle for the rest of the year they will not pay more than the three cent rate. The demand for local consumption is steadily increasing. Natural gas is very scarce; the bills increase whether you have the article or not.

Connellsville Coke.—Since our last there has been no increase in shipments. The snow blockade was quite a drawback in business, yet the operators have confidence that better things may be expected in the near future, and are in consequence of that belief keeping up the production at about the same standard as when they had cars sufficient to supply the demand of their customers. There are still many loaded cars lying on sidings along the route to their destination, which is still further curtailing the supply of empty cars returning to the region. The output of the region decreased fully 1% and the estimated production 25,000 tons, which leaves nearly 38,000 tons coke thrown on the yards of the region for the week. There were no changes made in the number of active and idle ovens, none being fired or blown out. The shipments for the week amounted to 87,210 tons, distributed as follows: To Pittsburg, 1,370; to points west of Pittsburg, 2,350; points east of Pittsburg, 870 cars; total, 4,590 cars.

Western shipments decreased 719 cars, Eastern shipments 30 cars and Pittsburgh shipments 205 cars, or a total decrease for the week of 954 cars. The asking rates are: Furnace coke, $1.90; foundry coke, $2.30; crushed coke, $2,65. Furnace coke is known to be sold considerably under these quotations, the average prices being about $1.75 per ton.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Feb. 3.

Heavy Chemicals.—There is no change of consequence to report of the heavy chemical market this week, either as to prices or as to the general features which characterized it at the time of our last report. Generally speaking, a fair business is doing and some of the chemicals are moving more freely, like alkali and sal soda, while others, like caustic soda, continue scarce. There is a fair demand for goods for future delivery; the spot market is quiet. We quote this week: Caustic soda, 60%, 2·95@3·10c.; 70%, 2·70@2·85c.; 74%, 2·72½@2·87½c.; 76%, 2·87½@3·10c. Carbonated soda ash, 48%, 1·40@1·60c.; 58%, 1·35@1·40c. Alkali, 48%, 1·35@1·40c.; 58%, 1·20@1·30c., according to package. Sal soda, English, on the spot, 1@1·05c.; American, ·90@·95c.; bleaching powder, 2·50c.

Acids.—The excellent condition of this market shows no change, and mannfacturers unanimously report exceedingly busy times. The demand continues active both for prompt and for future delivery, and prices are a shade firmer. We quote: Acid, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, $1.75@$2.25, according to quality; muriatic, 18°, 90c. @$1.10; 20°, $1@$1.25; 22°, $1.25@$1.50; nitric, 40°, $1; 42°, $4.50@$4.75; sulphuric, 90c.@$1.10; mixed acids, according to mixture; oxalic, $6 50@$7.25. Blue vitriol is quoted all the way from $3.25 to $3.75; glycerine for nitro-glycerine, 11½@12½c., according to quality and quantity.

Brimstone.—The market for Sicilian brimstone has been quiet during the past week. There has been a decline in the price of future shipments; they are now quoted at $19.25 for best unmixed seconds, and $18.50 for best thirds. Brimstone on the spot is held at $22 for best unmixed seconds, and at from 75c. to $1 for best thirds. Mr. Alfred S. Malcomson, the well-known brimstone dealer of this city, favors us with the following interesting statistics showing the exports of brimstone from Sicily:

To:	1892. Tons.	1891. Tons.	1890. Tons.
United States	84,450	97,590	106 636
France	72,176	56,068	71,790
Italy	38,711	42,212	40 231
United Kingdom	24,853	23,408	26,913
Russia	14,178	11,930	17,158
Portugal	13,490	11,139	16,695
Germany	11,326	10,629	15,703
Austria	9,096	10,575	8,746
Greece-Turkey	14.845	14.414	22,334
Belgium	5,133	5,089	7,279
Spain	7,382	3,845	5,679
Sweden, Norway, Denmark	4,561	2,552	3,714
Austria	1,200	....	....
India, South America, etc	4,135	3.542	2,565
	309,536	293,223	344,763

The stock in Sicily at the end of December was: 175,299 tons in 1892, 117,037 in 1891, and 106,770 tons in 1890.

Fertilizing Chemicals.—The main features of the fertilizer market show little or no change from last week. The ammoniates continue high in price, which has rendered profitable the importation of European blood. The orders for the various potash salts are all in now; the volume of business done this year exceeded that for the corresponding period of 1892, due to the improved condition of the market and the greater prosperity among farmers in the South. We quote this week: Sulphate of ammonia, $2.95@$2.97½ for bone goods and $3@$3.05 for gas liquor. Dried blood, $2.90@$3 per unit for high grade and $2.80@$2.90 for low grade; acidulated fish scrap, no stocks on hand; dried scrap, nominally $26 f. o. b. fish factory; Azotine, $2 75@$2.85. Tankage, high grade, $29@$31; low grade, $24@$25. Bone tankage, $23.50@$24; bone meal, $23@$25.

Phosphate Rock.—The phosphate market here commences to show signs of improvement, due to the better business abroad. Quotations are: $4.75 for 55% rock, free alongside at Charleston. The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, $1.12; Philadelphia, $1.14½; Charleston and Savannah, $1.17 cwt. basis, 48@50% in 50 ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis, 90%: New York and Boston, $2.07; Philadelphia, $2.09½; Charleston and Savannah, $2.12; sulphate of potash, 96-99%, basis 90%, is 4% higher.

Muriate of Potash.—During the week the arrivals amounted to 650 tons, all of which went into consumption. A good contract business was done during the week. Prices for 1893 are as follows: New York or Boston $1.78; Philadelphia, $1.80½; Southern ports, $1.83.

Kainit.—Quotations are as follows: New York, Philadelphia and Boston, $8.50 for foreign invoice weight and test, and $9 for actual weight; Charleston, Savannah and Wilmington, $9.25 for invoice weight and test; and $9.75 for actual weight.

Nitrate of Soda.—A very fair business has been done in nitrate during the past week. Quotations are as follows: On the spot, $2.22½@$2.25; to arrive, according to position. Future shipments, $1.70 @$1.75.

Liverpool. Jan. 20.

(From George G. Blackwell's Report.)

Minerals.—Our market has ruled steady. Manganese: Arrivals small; prices firm, with tendency to advance. Borate, 7½d. per lb.; sulphate, £21 10s.; oxalate, 1s. 6d. per lb.; chloride, £15; carbonate, £12 10s., steady. Magnesite (raw lump), in fair demand; raw ground, £6 10s., and calcined £12 10s. Bauxite (Irish Hill brand), in good demand; lump 20s., seconds 16s., thirds 12s. French chalk: Arrivals small, demand good, both for prompt and forward. "Angel White" brand and "Silvery," 90s. @ 92s. 6d.; prime quality, 90s. @ 95s.; and superfine, 105s. Barytes: Carbonate, best lump, scarce; nuts, 70s. @ 80s.; finest white sulphate is in demand. "Angel White" No. 1, 70s.; No. 2, 60s. @ 65s.; No. 3, 45s. Pumice stone quiet. Iron ore flat, Bilbao, Irish and Cumberland easy. Santander and manganiferous quiet. Emery stone inquired for and prices are firm; No. 1 lump,

£5 10s. @ £6; smalls, £5 @ £5 10s. Fullers' earth quiet; best lump, 55s.; fine impalpable ground, £7: "Emerald" ground, 80s. Scheelite, wolfram, tungstate of soda and tungsten metal are much sought after, and prices are unaltered. Chrome ore is in good demand for best qualities, and prices firm. Antimony ore steady at £12, and metal £43@£45. Asbestos very firm. Potters' lead ore, smalls, £10 10s. @ £11. Calamine strontia sulphate (celestine), quiet. Limespar steady, especially for English manufactured, old G.G.B. brand in demand at 50s. (ground). Feldspar quiet. Fluorspar: Best quality scarce. Ferromanganese in better demand. Plumbago: Spanish, £5; best Ceylon lump at last quotations; Italian and Bohemian, £4@£12 per ton; "Founders," £5@£6; Blackwell's "Mineraline," £10. French sand, 20s.@22s. 6d. Ground mica; £45@£50. China clay steady; common, 18s 6d.; good medium, 22s. 6d.@25s.; best, 30s.@35s. (at Runcorn). Irish moss: Common rather freely offered at low prices, while the best is scarce at advanced figures; medium, £12 10s. Bog ore (oxide of iron), scarce; finest quality 25s.@30s.

Chemicals steady. Bleaching powder rising at £7 15s.@£8. Soda ash, £5. 6s. 3d. up. Caustic soda, 60% cream, £9; 70% white, £10. Bicarbonate, £6 15s. Nitrate of soda, 9s.@10s. Soda crystals, £3 5s. Salt cake, 35s. Chlorate of potash, 8¼d. Arsenic, £13@£13 10s. Oxide of uranium, 15s. 6d. Sulphate of copper, £16 10s. Chloride of magnesium (antiseptic), strong at 45s @50s. Montreal ashes: Pot, 25s.@26s.; pearl, 45s.@46s.

Liverpool. Jan. 25.

(Special Correspondence of Joseph P. Brunner & Co.)

There is a fair trade passing in heavy chemicals, but at the same time the position is very unsettled.

Soda Ash.—It is impossible to give any reliable quotations at present, as manufacturers are cutting rates, and the only way to test the position is to make bids. The nominal values may be quoted at about as follows: Caustic ash, 48%, £5@£5 5s.; 57 and 58%, £5 15s.@£6 per ton. Carb. ash, 48%, £5@£5 5s.; 58%, £5 15s.@£6 per ton. Ammonia ash, 58%, £5 2s. 6d.@£5 7s. 6d. per ton, all net cash. Special concessions will be made for contracts over all 1893.

Soda Crystals are quiet at £3 2s. 6d.@£3 3s. 9d. per ton, less 5%.

Caustic Soda is in light request and quotations vary considerably, according to the export market. On the spot nominal values range about as follows: 60%, £8 10s@£9 per ton; 70%, £9 10s.@£10 per ton: 74%, $10 10s.@£11 per ton 76%, £11 15s.@$12 per ton, all net cash. For parcels under 10 tons, 5% per ton extra is charged. Special reductions would be made to home consumers for contracts over 1893.

Bleaching Powder firm at £8@£8 5s. per ton, net cash for hardwood casks.

Chlorate of Potash is rather easier, in spite of the article being in small compass. For early delivery the quotations range from 8¼d. down to 8d. for February-March. We quote 7¾d.@8d. for April-June, 7½d.@7¾d. and 7d. for July-December. At the close to day there is some little movement in this article, and holders have withdrawn for the moment.

Bicarb. Soda is steady at £6 15s. per ton, less 2½% for one cwt. kegs, with usual allowances for larger packages.

Sulphate of Ammonia is in a strong position, and it is difficult to find any sellers for prompt delivery. The nearest values are about £10 10s.@£10 12s. 6d. per ton for good gray 24%, and £10 15s. for 25%, both in double bags, less 2½% f. o. b. here, but the article is very scarce. The tendency is to still higher prices.

Nitrate of Soda has further advanced, and is now quoted at £9 12s. 6d.@£9 15s. per ton, less 2½% for double bags f. o. b. here, and a further advance is anticipated.

Carb. Ammonia.—Lump, 2⅞d. per lb.; powdered 3⅛@3¼d. per lb.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, chem. pure.....16@.17
Commercial, in bbls. and cbys...015@.017
Carbonic, liquefied, ℔ lb..... ....18@.25
Chromic, chem pure, ℔ lb 1.00
for batteries..... . .40
Hydrobromic, dilute, U. S. P..... .25
Hydrocyanic, U. S. P.....45
Hydrofluoric..... .20
Alcohol—95%, ℔ gall.....$2.30@$2.40
Absolute.....$3.80
Ammoniated.....$2.80
Alum—Lump, ℔ cwt..... $1.75@$1.80
Ground, ℔ cwt..... .....$1.85@$1.90
Powdered, ℔ lb..... .....04½@.06
Lump ℔ ton, Liverpool £6
Aluminum Chloride—Pure, ℔ lb..$1.25
Amalgamating solution, ℔ lb..... .60
Sulphate, ℔ cwt ..... $1.90@$2.50
Ammonia—Sul., in bbl. lots, ℔ lb.02½@.03
Carbonate, ℔ lb., English and German, .07½@.07¾
Muriate, white, in bbls., ℔ lb..... .08½
Aqua Ammonia—(in cbys) 18° ℔ lb.03@.04
20°, ℔ lb.....04@.05
26°, ℔ lb..... 05@.05½
Antimony—Oxymur, ℔ lb..... .04@.06
Regulus, ℔ lb..... .....10@.11½
Argols—Red, powdered, ℔ lb..... .15
Arsenic—White, powdered ℔ lb..03@.03½
Red ℔ lb.....065@.07
Yellow.....08@.09
White at Plymouth, ℔ ton.....£12 2 6
Asbestos—Canadian, ℔ ton.....$50@$300
Italian, ℔ ton, c. i. f. L'pool....£18@£60
Ashes—Pot, 1st sorts, ℔ lb.....4.75@5
Pearl.....06@.06¼
Asphaltum—
Prime Cuban, ℔ lb.....04@.05
Hard Cuban, ℔ ton.....$28.00@$30.00
Trinidad, refined, ℔ ton...$30.00@$35.00
Egyptian and Syrian, ℔ lb.....05@.07½
Californian, at mine, ℔ ton $12.00@$26.00
at San Francisco, ℔ ton, $15.00@$20.00
Barium—Carbonate, pure, ℔ lb..... .45
Carbonate, commercial, ℔ lb.... .05@.10
Chlorate, crystal, ℔ lb.....75
Chloride, commercial, ℔ lb..... .05@.10
pure, ℔ lb..... 16
Iodide, ℔ oz.....40
Nitrate, ℔ lb..... .....06½@.07½
Sulph., Am. prime white, ℔ ton $17.50@$19
Sulph., foreign, floated, ℔ ton..... $21@$23
Sulph., off color, ℔ ton.... .$11.50@$14.00
Carb., lump, f. o. b. L'pool, ℔ ton.....£6
No. 1, Casks, Runcorn, " " .. £4 10 0
No. 2, bags, Runcorn, " " .. £3 15 0
Bauxite—℔ ton.....$10.00
Bichromate of Potash—Scotch, ℔ lb..... .....11@.12
American, ℔ lb..... .....11@.12
Bichromate of Soda—℔ lb....09½@.10
Borax—Refined, ℔ lb., in car lots.08@.09
San Francisco.....08@.08½
Concentrated, in car lots..... .07½@.08
Refined, Liverpool ℔ ton.... .....£2
Bromine—℔ lb.... .....15@0.2
Cadmium Minion—℔ lb..... $2.00
Cadmium Iodide—℔ lb..... $5.50
Chalk—℔ ton ..... $1.40@$1.75
Precipitated, ℔ lb.....05@.06
China Clay—English, ℔ ton..$13@$18.00
Domestic, ℔ ton..... .....$9@$11
Chlorine Water—℔ lb..... 10
Chrome Yellow—℔ lb..... .....10@.25
Chrome Iron Ore—℔ ton, San Francisco.....$10.00
Chromalum—Pure, ℔ lb..... .40
Commercial, ℔ lb.....12
Cobalt—Oxide, ℔ lb..... $1.90@$2.00
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ordinary, ℔ lb. 03¼@.0 ½
" " **extra**..... .04½
Nitrate, ℔ lb.....40
Copperas—Common, ℔ 100 lbs. .90@$1.00
Best, ℔ 100 lbs..... .....$1.35@$1.50
Liverpool, ℔ ton, in casks....£2@£2 10s.
Corundum—Powdered, ℔ lb.. .04½@.09
Flour, ℔ lb.....03
Cryolite—Powdered, ℔ lb., bbl. lots. .07
Emery—Grain, ℔ lb. (℔ kg.)..... .04½@.05
Flour, ℔ lb..... .....02½@.10
Epsom Salt—℔ lb..... 01@.01½
Feldspar—Ground, ℔ ton..$6.00@$10.00
Crude.....$2.00@$3 00
Fluorspar—Powdrd, No. 1, ℔ ton. $20@$30
Lump, at mine..... .....$6@$8
French Chalk—
Fuller's Earth—Lump, ℔ ton. $16@$20
Glauber's Salt—in bbls., ℔ lb...01@.01¼
Glass—Ground, ℔ lb..... 10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g. s. v., ℔ doz..... $5.50
Chloride and sodium, ℔ oz $6.00
15 gr., c. v., ℔ doz. $2.88
Oxide, ℔ oz..... $27.25
Gypsum—Calcined, ℔ bbl... $1.25@$1.50
Land Plaster.....
Iodine—Resublimed.....$3.30@$3 35
Iridium—Oxide ℔ lb..... $90
Iron—Nitrate, 40°, ℔ lb..... ..01@.01½
47°, ℔ lb..... .02@.02½
Kaolin—*See China Clay.*
Kieserite—℔ ton..... $9@$10
Lead—Red, American, ℔ lb ...063¼@.07½
White, American, in oil, ℔ lb. .06½@.07½
White, English, ℔ lb., in oil.. .08½@.08¾
Acetate, or sugar of, white.... .06@.06½
Granulated.....
Nitrate..... .....09@.10
Lime Acetate—Am. Brown..... .90@.95
" **Gray**..$1.75@$1.87½
Litharge—Powdered, ℔ lb.. .063¼@.07½
English flake, ℔ lb..... .09@.09½
Magnesite—Crude, ℔ ton of 1,015 kilos.....$14.75
Calcined, ℔ ton of 2,240 lbs.....$22.00
Brick, ℔ ton of 2,240 lbs.....$47.50
Manganese—Ore, per unit.....23@.28
Oxide, ground, ℔ lb.....02½@.06½
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb..... .62@.64
Powdered, ℔ lb..... 50
Marble Dust—℔ bbl..... $1.25
Metallic Paint—Brown ℔ ton. $20@$25
Red..... $20@$25
Mineral Wool—Ordinary slag... .01½
Ordinary rock..... .02½
Ground, ℔ ton.....
Mica—In sheets according to size.
1st quality, ℔ lb..... .25@$6.00
Naphtha—Black.....
Nitre Cake—℔ ton..... $10.00
Ochre—Rochelle, ℔ lb..... $1.10@$1.50
Washed Nat Oxf'rd, Lump, ℔ lb.06½@.06¾
Washed Nat Oxf'rd, Powder, ℔ lb.07@.07¼
Golden, ℔ lb..... .....03@.05
Domestic, ℔ ton.. . ..... $12@$20
Oils, Mineral—
Cylinder, light filtered, ℔ gal... .14@.16
Dark filtered, ℔ gal.... .10@.13
Extra cold test, ℔ gal. .20@.24
Dark steam refined, ℔ gal.09@.12
Phosphorus—℔ lb..... .50@.55
Precip., red, ℔ lb..... .82@.85
white, ℔ lb..... .85@.90
Platinic Chloride—℔ oz..... $7
Plumbago—Ceylon, ℔ lb..... .04@.06
American, ℔ lb..... .05@.07
Potassium—Cyanide, ℔ lb., C. P. .70
67%, ℔ lb..... .45
fused..... .40
Bromide, domestic, ℔ lb..... .25@.28
Chlorate, English, ℔ lb..... .14@.15
Chlorate, powdered, English, ℔ lb.. .14½@.15½
Carbonate, ℔ lb., by casks, 82% .04½@.05
Caustic, ℔ lb., pure slick..... .06@.06½
Iodide, ℔ lb..... .....$2.58@$2.80
Nitrate, refined, ℔ lb..... .06@.08
Bichromate, ℔ lb..... .10@.11½
Yellow Prussiate, ℔ lb..... .23
Red Prussiate, ℔ lb..... .42@.45
Pumice Stone—Select lumps, ℔ lb.03½@.15
Original cks., ℔ lb..... .01½@.02
Powdered, pure, ℔ lb..... .01½@.01¾
Pyrites—Non-cupreous, p. units. .12@.15
Quartz—Ground, ℔ ton.... $6.00@$10.00
Rotten Stone, Powdered, ℔ lb.03¼@.03¾
Lump, ℔ lb..... .....06@.07
Original cks, ℔ lb..... .04½@.05¼
Rubbing stone, ℔ lb.. .....03½@.04
Sal Ammoniac—lump, in bbls., ℔ lb.80¼
Salt—Liverpool, ground, ℔ sack.... .70
Domestic, fine, ℔ ton.....$7@$7.5
Common, fine, ℔ ton.....$4.50@$5
Turk's Island, ℔ bush..... .26@.28
Salt Cake—℔ ton..... .....$10.0 @$15.00
Saltpeter—Crude, ℔ lb..... .03¼@.04
Soapstone—Ground, ℔ ton..... $6@$
Block and slab according to size.
Sodium—Prussiate, ℔ lb.. .....22@.24
Phosphate, ℔ lb.... ..... .04@.05
Stannate, ℔ lb.... ..... .06@.12
Tungstate, ℔ lb.... .....
Hyposulphite, ℔ lb., in casks. .0235@.0240
Strontium—Nitrate, ℔ lb.. . . .08¾@.09
Sulphur—Roll, ℔ lb..... .02½
Flour, ℔ lb..... .....02½
Sylvinit, 27@35%, S.O.P., per unit.....40
Talc—Ground French, ℔ lb....01¼@.01¾
American No. 1, ℔ lb..... .01¼@.01¾
American No. 2..... 006
Terra Alba—French, ℔ lb..... .65@.80
English, ℔ lb..... .....65@.80
American, No. 1, ℔ lb..... .....60@.70
American, No. 2, ℔ lb..... .....45@.50
Tin—Crystals, in kegs or bbls.... .14@.16
feathered or flossed. .20
Muriate, single..... .07@.08
Double or strong, 54° B..... .16@.18
Oxymur, or nitro..... .19
Vermilion—Imp. English, ℔ lb. .85@.90
Am. quicksilver, bulk.....57 @.6
Am. quicksilver, bags.....58 @ .6
Chinese..... .....85 @$1.00
Trieste..... .....90 @ .9
American..... .....11½@ .12
Zinc White—Am., Dry, ℔ lb . 04½@ .0
Antwerp, Red Seal, ℔ lb.....06⅞@.07
Paris, Red Seal, ℔ lb..... .07⅝@.08
Muriate solution..... .06
Sulphate crystals, in bbls., ℔ lb. .03½

THE RARER METALS.

Aluminum—℔ lb.....50@.6
Arsenic—(Metallic), per lb..... .4
Barium—(Metallic), per gram.... $4.0
Bismuth—(Metallic), per lb..... $2.25
Cadmium—(Metallic), per lb..... $1.0
Calcium—(Metallic), per gram....$10.0
Cerium—(Metallic), per gram..... $7.5
Chromium—(Metallic), per gram. $1.0
Cobalt—(Metallic), per lb..... $6.0
Didymium—(Metallic), per gram. $9.0
Erbium—(Metallic), per gram..... $7.5
Gallium—(Metallic), per gram....$140.0
Glucinum—(Metallic), per gram..$12.0
Indium—(Metallic), per gram..... $9.0
Iridium—(Fused), per oz..... $12.0
Lanthanum—(Metallic), per gr..$10.0
Lithium—(Metallic), per gram.... $10.0
Magnesium—(Powdered), per lb. $4.0
Manganese—(Metallic), per lb.... $1.1
Chem. pure, per oz. $10.0
Molybdenum—(Metallic), per gm .5
Niobium—(Metallic), per gram... $5.0
Osmium—(Metallic), per oz..... $65.0
Palladium—(Metallic), per oz....$35.0
Platinum—(Plate), per oz..... $11.00
Potassium—(Metallic), per lb.....$28.0
Rhodium—(Metallic), per gram.. $5.0
Ruthenium—(Metallic), per gm.. $5.5
Rubidium—(Metallic), per gram. $2.0
Selenium—(Metallic), per oz..... $1.8
Sodium—(Metallic), per lb..... 5@.75
Strontium—(Metallic), per gm.... .6
Tantalum—(Metallic), per gram. $9.0
Telurium—(Metallic), per lb..... $5.0
Thallium—(Metallic), per gram.. .20
Titanium—(Metallic), per gram.. $2.20
Thorium—(Metallic), per gram...$17.0
Tungsten—(Metallic), per lb..... .8
Uranium—(Oxide), per lb.. ..... $5.0
Metallic, per gm..... .20
Vanadium—(Metallic), per gm...$22.0
Yttrium—(Metallic), per gram.... $9.00
Zirconium—(Metallic), per oz.... $33.0

STOCK MARKET QUOTATIONS.

Denver.

Prices and sales for the week ending January 28th, 1893:

	High.	Low.	Sales.
Anaconda	$ .31	$ .26	6,400
Bangkok-Cora Belle	.02½	02¼	7,600
Brownlow	.02½	.02½	5,000
Claudia J	.01	.01	6,600
Diamond B	.01½	.01⅛	6,000
Gold Rock	.05	.04½	1,500
Justice	.01½	.01½	1,800
Pharmacist	.25	.23¼	300
Work	.09	.07½	1,400
Total sales			36,600

Pittsburg, Pa. Feb. 2.

COMPANY.	B	A.
Bridgewater Gas Co.	27.00	40.00
Chartiers Val. Gas	10.00	11.00
Enterprise Mining Co	2.50	3.00
Hidalgo Mining Co	5.50	6.50
Custer Mining Co	10 25	10.50
N. Y. & Clev. G. D.	50.00	51.50
Pennsylvania Gas	9.75	10,13
People's N. G. & P. Co.	14.75	15.00
Philadelphia Co.	21.63	21.75
Wheeling Gas Co.	17.50	18.25
W'house Air Brake Co.	131.50	...

Aspen, Colo. Jan. 30.

Name of Stock.	Bid.	Asked
Argentum Juniata	$0.63	$0.65
Aspen Contact	1.25	1.50
Aspen Deep Mining	.10	.11
Best Friend	.10	.12
Bi-Metallic	.12	.13
Bushwacker	.20	.23
Delia S.	1.90	2.00
Empire Champion	.12	....
Gold Valley Placer	..	.15
Little Annie	.10	.11
Mollie Gibson	8. 0	9.00
Pontiac	.10	.12
Smuggler	16 50	17.00
St. Joe & Mineral Farm	.11	.13
U. S. Paymaster	....	.20

Colorado Springs, Colo. Jan. 30.

	Bid.	Asked.
Anaconda Gold	.30	32
Buena Vista	..	.12½
Calumet	.01	.05
Cleopatra	..	.20
Fanny Rawlins	.08	.08½
Gold & Globe	....	.07½
Isabella	.16½	..
Jack Pot	.02	.02½
Jeff Davis	.04	.05
Lemhi	1.30	..
Manitou Park	...	.10
Matoa	..	.12
Ophir	..	.07
Orphan Bell	.04	.05½
Pearce-Jensen Reduct'n Co.	..	.05
Pharmacist	.27	.30
Work	.08	.10

Duluth. Jan. 30.

LISTED STOCK.

	Par.	Bid.	Asked
Biwabik M. Iron Co.	100	35.00	39.00
Cincinnati Iron Co.	25	2.00	2.05
Clark Iron Co.	100	.17½	....
Cosmopolitan Iron Co.	....	.25	....
Great Northern Min. Co.	100	8.00	9 00
Kanawha Iron Co.	100	1.25	1.75
Keystone Iron Co	....	1.00	....
Lake Superior Iron Co.	25	2 50	3.00
Little Mesaba Iron Co.	100	1.50	4.75
Mountain Iron Co	100	75 00	97.50
Minneapolis Iron Co.	100	.25	....
Mesaba Moun. Iron Co.	100	22.00	24.50
Shaw Iron Co.	100	5.00	7.00
Security Land & Exp. Co.	10	20.50	30.00
Washington Iron Co.	100	1.00	4.00

UNLISTED STOCKS.

Allegheny Iron Co.	10	....	.75
Aurora Iron Co.	..	....	1.00
Athens Iron Co.	100	....	10.00
Buckeye Iron Co.	100	....	10.00
Chandler Iron Co.	25	....	44.00
Chicago Iron Co.	100	....	3.00
Charleston Iron Co.	100	1.25	..
Champion Iron Co.	100	.50	.75
Comstock Iron Co.	100	.10	..
Columbia Iron Co.	100	....	10.00
Detroit Iron Co.	25	....	.50
Dayton Iron Co.	100	....	.25
Great Western Mining Co.	100	3.25	3.40
Horton Mining Co.	10	.06½	.15
Homestead Iron Co.	25	.04	.07
Kentucky Iron Co.	100	.20	.40
Kakina Iron Co.	25	....	2.50
Lackawanna Iron Co.	100	.30	....
McKinley Iron Co.	100	28.50	....
Mesaba Chief Iron Co.	100	5.00	5.10
Myrna Iron Co.	10	—	.25
Northern Light Iron Co.	100	.10	....
New York Iron Co.	25	....	.40
New England Iron Co.	100	....	2.25
Ohio Mining Co.	100	9.00	9.25
Oneota Iron Co	100	....	....
Pennsylvania I. & S. Co.	100	.25	....
Rouchleau Iron Co	100	.60	1.00
Republic Iron Co.	25	....	1.00
Red Hematite Iron Co	100	....	.90
Standard Ore Co	25	2.00	3 75
Towanda Iron Co.	100	1.00	....
Zenith Iron Co.	25	2.50	3.00

Deadwood. Jan. 21.

	Bid.	Asked.
Deadwood Terra	$1 30	$1.75
Double Standard	.22	.25
Golden Reward	1.38	1.50
Hawkeye	.62	.65
Iron Hill	.15	.20
Isadora	.25	.30
Mutual	.01¼	.01¾
Ruby Bell	.20	.35
Seg. Iron Hill	.01	.01½
Tornado	.25	.30

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 28 H.	Jan. 28 L.	Jan. 30. H.	Jan. 30. L.	Jan. 31. H.	Jan. 31. L.	Feb 1. H.	Feb 1. L.	Feb. 2. H.	Feb. 2. L.	Feb. 3. H.	Feb. 3. L.	SALES.
Adams, Colo.													
Alice, Mont.													
Amador, Cal.													
Atlantic, Mich.													
Belcher, Nev.	1.25												50
Belle Isle, Nev.													
Bodie Cons., Cal.													
Bos. & Mont., Mont													
Breece, Colo.													
Bulwer, Cal.													
Caledonia, S. Dak.													
Catalpa, Colo.													
Chrysolite, Colo.													
Colorado Central, Colo.													
Commonwealth, Nev.													
Comstock T. bonds, Nev.													
" scrip., Nev.											.25		200
Cons. Cal. & Va., Nev.	2.60												100
Crown Point, Nev.													
Deadwood, Dak.							1.70						100
Enterprise													
Eureka, Cons., Nev.													
Father de Smet, Dak.													
Freeland, Colo.													
Gould & Curry, Nev.	.96		.85										200
Grand Prize, Nev.													
Hale & Norcross, Nev.	.95										.95		250
Homestake, Dak.													
Horn Silver, Utah.													
Independence, Nev.													
Iron Hill, Dak													
Iron Silver, Colo													
Leadville Cons., Colo.													
Little Chief, Colo.													
Martin White, Nev.													
Mono													
Mt. Diablo, Nev.													
Navajo, Nev.													
N. Belle Isle, Nev.													
Ontario, Utah													
Ophir, Nev.	1.90		1.90								2.00		170
Overman, Nev.													
Plymouth, Cal.													
Quicksilver, Pref., Cal.													
" Com., Cal.													
Quincy, Mich.													
Robinson Cons., Colo.													
Savage, Nev.													
Sierra Nevada, Nev.							1.70				1.40		200
Silver Cord, Colo.													
Silver King, Ariz.													
Silver Min. of L. Valley													
Small Hopes, Colo.													
Standard Cons., Cal.													
Yellow Jacket, Nev.	.70	.65							.85	.80	.85		500

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Jan. 28. H.	Jan. 28. L.	Jan. 30. H.	Jan. 30. L.	Jan. 31. H.	Jan. 31. L.	Feb. 1. H.	Feb. 1. L.	Feb 2. H.	Feb 2. L.	Feb. 3. H.	Feb. 3. L.	SALES
Alpha., Nev.													
Alta, Nev	.30	.25											200
American Flag, Colo.													
Andes, Cal.	.47												100
Astoria, Cal.													
Augusta, Ga.													
" bonds													
Barcelona, Nev.													
Belmont, Cal.				.20				.20		.20			400
Best & Belcher, Nev.	1.35			1.40							1.55		300
Bonanza King, Cal.													
Brunswick, Cal.											.08	.07	500
Bullion, Nev.													
Butte & Bost., Mont.													
Castle Creek, Idaho.													
Chollar									.65	.60	.80		300
Comstock T., Nev.													
Con. Imperial, Nev.													
Con. Pacific, Cal.													
Crescent, Colo.													
Del Monte, Nev.													
El Cristo, Rep. of Col.				.50	.45	.50	.45						1,200
Emmett, Colo													
Exchequer, Nev.	.32	.31											300
Independence, Nev.													
Julia, Nev													
Justice, Nev													
Kentuck, Nev													
Lacrosse, Colo.													
Lee Basin, Colo.													
Mexican, Nev.	1.45		1.45								1.65		300
Middle Bar, Cal.													
Monitor, Colo.													
Monte Cristo, N. S. of C.	2.80	2.75	2.90	2.80	2.95	2.90	3.05	2.90	3.10	2.95	3.20	3.05	8,700
Nevada Queen, Nev.													
N. Standard, Cal.													
N. Commonwealth, Nev.													
Occidental, Nev.													
Oriental & Miller, Nev.													
Phœnix Lead, Colo.													
Phœnix of Ariz.							.45			.43	.42	.45	4,300
Potosi, Nev.												1.90	100
Rappahannock, Va.													
S. Sebastian, S. Sal.													
Santa Fe, N. M.													
Scorpion, Nev.													
Seg. Belcher, Nev.													
Shoshone, Idaho.													
Silver Hill, Nev													
Sullivan Con., Dak.													
Sutro Tunnel, Nev.													
Syndicate, Cal.													
Tornado Con., Nev.	.07	.05	.05	.04									1,900
Union Cons., Nev.													
Utah, Nev													

*Ex-dividend. +Dealt at in New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold 1,870. Non-dividend shares sold, 18,600. Total shares sold, 20,470.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Jan 27.		Jan. 28.		Jan. 30.		Jan. 31.		Feb. 1.		Feb. 2.		SALES.
Atlantic, Mich.							9.50	9 00					20
Bodie, Cal.													
Bonanza Development.													
Bost. & Mont., Mont.			33 50		33.50	33.38	33.00		33.25				275
Breece, Colo.													
Calumet & Hecla, Mich.	310	309			306	305					308		409
Catalpa, Colo.													
Central, Mich.													
Coeur d'Alene, Id.													
Con. Cal. & Va., Nev.													
Dunkin, Colo.													
Eureka, Nev.													
Franklin, Mich.	13.00										13.00		300
Honorine, Utah.													
Horn Silver, Utah.													
Kearsarge, Mich.													
Lake Superior, Iron.													
Little Pittsburg, Colo.													
Minnesota Iron, Minn.													
Napa, Cal.							5.75		6.00	5.75			550
Ontario, Utah													
Osceola, Mich.	36.25						36.75		35.75	35.50			137
Quincy, Mich.							135		135		136		56
Ridge, Mich.													
Sierra Nevada, Nev.													
Silver King, Ariz.													
Stormont, Utah.													
Tamarack, Mich.	160	158	160		161	160	162		161	158½			58
Tecumseh, Mich.													

NAME OF COMPANY.	Jan. 27.		Jan. 28.		Jan. 30.		Jan. 31.		Feb. 1.		Feb. 2.		SALES.
Allouez, Mich.			.70										25
Arnold, Mich.													
Aztec, Mich.													
Brunswick, Cal.													
Butte & Boston, Mont.			11.00	10.88	10.75	10.50		10.50					625
Centennial, Mich.	8.00												210
Colchis, N. Mex.													
Copper Falls, Mich.	7.50												
Crescent, Colo.													100
Dana, Mich.													
Don Enrique, Mex.													
Geyser, Colo.													
Hanover, Mich.													
Humboldt, Mich.													
Hungarian, Mich.													
Huron, Mich.													
Mesnard, Mich.													
National, Mich.													
Native, Mich.													
Oriental & M., Nev.													
Phœnix, Ariz.													
Pontiac, Mich.													
Rappahannock, Va.													
Santa Fe, N. Mex.													
Shoshone, Idaho.													
South Side, Mich.													
Tamarack, Jr, Mich.					20.00				19.00		19.00		95
Washington, Mich.													
Wolverine, Mich.			1.75										500

Dividend shares sold, 1,905. Non-dividend shares sold, 1,555. Total shares sold, 3,460.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last			Dividends. Total paid.	Dividends. Date & amount of last.		
1	Adams, s. L. C.	Colo.	$1,000,000	100,000	$10	*				$637,500	Jan.	1892	.05
2	Alaska-Treadwell, g.	Al'ska	5,000,000	200,000	25					1,450,000	Oct.	1892	.37½
3	Alice, s.	Mont.	10,000,000	400,000	25	*				975,000	Nov.	1891	.06¾
4	Alma & Nel Wood., G	Idaho	300,000	30,000	10	*				60,000	Jan:	1889	.50
5	Amador, G.	Cal.	1,250,000	250,000	5	*				31,250	Aug.	1890	.12½
6	American, G.	Colo.	3,000,000	300,000	10	*				225,000	Mar.	1892	.05
7	American Belle, s.g.c	Colo.	2,000,000	400,000	5	*				50,000	April	1891	.12½
8	Americ'n & Nettie, G. &	Colo.		300,000						175,000	Mar.	1892	.05
9	Atlantic, C.	Mich.	1,000,000	40,000	25	280,000	April	1875	$1.00	700,000	Feb.	1891	1.00
10	Argenta, s.	Nev.	1,000,000	100,000	100	335,000	July.	1889	.10	40,000	Feb.	1880	.20
11	Argyle, g.	Colo.	1,000,000	1,000,000	1	*				20,000	Mar.	1892	.01
12	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*				764,000	Sept.	1892	.10
13	Aurora, I.	Mich.	2,500,000	100,000	25					455,000	June	1892	1.00
14	Badger, s	Ont.	250,000	50,000	5					37,500	Mar.	1890	.25
15	Bald Butte	Mont.	250,000	250,000	1	*				72,500	Mar.	1892	.03
16	Bates Hunter, s. g.	Colo.	1,000,000	1,000,000	1						Dec.	1891	.00¾
17	Belle Isle, s.	Nev.	10,000,000	100,000	100	220 00	Aug.	1892	.10	300,000	Dec.	1879	.25
18	Belcher, s. g.	Nev.	10,400,000	104,000	100	3,16 (00	May	1892	.25	15,397,000	April	1876	1.00
19	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	1: 000	Dec.	1889	.2	200,000	Jan.	1890	.10
20	Best Friend	Colo.	1,000,000	1,000,000	1					90,000	Feb.	1892	.01
21	Bi-Metallic, s. G.	Mont.	5,000,000	200,000	25					2,140,000	Dec	1892	.20
22	Bodie Con., G. I.	Cal.	10,000,000	100,000	100	50,000	June	1890	.25	1,602,572	April	1885	.50
23	Boston & Mont., G.	Mont.	2,500,000	250,000	10	*				520,000	June	1886	.15
24	Boston & Mont., C. &	Mont.	3,125,000	125,000	25	*				2,075,000	Nov.	1891	1.00
25	Brooklyn Lead, L. &	Utah.	500,000	50,000	10					127,000	July.	1887	.05
26	Bulwer, G.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	190,000	Oct.	1892	.05
27	Bunker Hill & S. & L.	Idaho	3,000,000	300,000	10	*				150,000	Oct.	1888	.06⅜
28	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May.	1885	.15	192,000	Oct.	1890	.08
29	Calliope, s.	Colo.	1,000,000	1,000,000						140,000	Jan.	1891	.00¼
30	Calumet & Hecla C	Mich.	2,500,000	100,000	25	1,200,000				38,850,000	Dec.	1892	5 00
31	Centen'l-Eureka, s. L.	Utah.	1,500,000	30,000	50					577,500	Dec.	1892	.50
32	Central, C.	Mich.	500,000	20,000	25	100,000	Oct.	1861	.65	1,970,900	Feb.	1891	1.00
33	Champion, G			34,000	10					114,900	Dec	1892	.10
34	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*				1,450,000	Dec.	1884	.25
35	Clay County, G.	Colo.	200,000	200,000	1	*				56,000	Nov.	1891	.02
36	Clinton Cou, g.	Cal.	5,000,000	100,000	5					80,000	Nov.	1891	.10
37	Coeur D'Alene, s. L.	Idaho	5,000,000	500,000	10	*				310,000	Nov.	1891	.02
38	Colorado Central, s. L.	Colo.	2,750,000	275,000	10	*				502,500	Jan.	1892	.05
39	Commonwealth, s.	Nev.	10,000,000	100,000	100	190,000	Sept.	1892	.10	20,000	Nov.	1890	.20
40	Conndence, s. L.	Nev.	2,496,000	24,960	100	1,589,550	Aug.	1892	.50	199,680	April	1889	1.00
41	Cons. Cal. & Va., s. G	Nev.	21,600,000	216,000	100	168,000	Jan.	1885	.20	3,682,800	Aug.	1891	.50
42	Contention, s.	Ariz.	12,500,000	250,000	50					2,637,500	Aug.	1892	.20
43	Cook's Peak, s.	N. M.	2,000,000	200,000	10					114,532	Nov.	1892	.05
44	Cop. Queen Con., C.	Ariz.	1,400,000	140,000	10					1,260,000	Nov.	1892	1.00
45	Coptis	Nev.	10,000,000	100,000	100					67,000	July.	1892	.12
46	Cortes, s.	Nev.	1,500,000	300,000	5	*				687,000	Mar.	1892	.50
47	Crescent, s. L. G.	Utah.	15,000,000	600,000	25	60,000	Oct.	1892	.10	238,000	Oct.	1888	.03
48	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,700,000	Sept.	1892	.25	11,898,000	Jan.	1875	2.00
49	Cumberland, L. S.	Mont.	5,000,000	500,000	10	*				15,000	Nov.	1889	.08
50	Daly, s. L.	Utah.	3,000,000	150,000	20					2,650,000	Jan.	1893	.25
51	Deer Creek, s. G.	Idaho	1,000,000	200,000	5	*				20,000	June	1889	.05
52	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*				1,150,000	Oct.	1892	.05
53	DeLamar, s. G.	Idaho	2,000,000	400,000	5					550,000	Oct.	1892	.25
54	Derbec S. Grav., G.	Cal.	10,000,000	100,000	100	100,000	Sept.	1892	.10	60,000	Aug.	1891	.10

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and am't of last.		
1	Alliance, s. G.	Utah.	$100,000	100,000	$1	$125,000	Feb.	1891	.25
2	Allouez, C.	Mich.	2,000,000	80,000	25	237,000	Jan.	1890	.75
3	Alpha Con., G. & S.	Nev.	3,000,000	30,000	100	206,000	Sept.	1892	.10
4	Alta, s.	Nev.	10,080,000	100,800	100	3,369,880	Jan.	1892	.10
5	American, C.	Idaho	5,000,000	500,000	10				
6	American Flag, s.	Colo.	1,250,000	125,000	1	300,000	June	1887	
7	Amity, s.	Colo.	250,000	250,000	20				
8	Anchor, s. L. G.	Utah.	3,000,000	150,000	5	410,000	June	1890	.20
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	125				
10	Appalachian, g.	N. C.	1,750,000	1,400,000	20				
11	Arizona, C.	Ariz.	3,575,000	160,000	2				
12	Astoria, G.	Cal.	200,000	100,000	5				
13	Atlanta, g. s.	Idaho	3,250,000	650,000	25				
14	Barcelona, G.	Nev.	5,000,000	200,000	5	*			
15	Bear Creek	Idaho	100,000	20,000	1				
16	Belmont, G.	Cal.	500,000	500,000	100	*			
17	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	April	1886	.10
18	Best & Belcher, s. G.	Nev.	10,080,000	100,800	10	2,405,275	Aug.	1892	.25
19	Black Oak, G.	Cal.	3,000,000	300,000	100	*			
20	Boston Con., G.	Cal.	10,000,000	100,000	1	170,000	Nov.	1888	.25
21	Brownlow, G.	Colo.	250,000	250,000	5				
22	Brunswick, G.	Cal.	2,000,000	400,000	2				
23	Buckeye, s. L.	Mont.	1,000,000	500,000	100				
24	Bullion, s. G.	Nev.	10,000,000	100,000	100	2,890,000	Aug.	1892	.25
25	Burlington, g. s.	Cal.	10,000,000	100,000					
26	Butte & Boston, C. &	Mont.	5,000,000	200,000	10				
27	Butte Queen, G.	Cal.	1,000,000	100,000	1	6,000	Jan.	1892	.04
28	Calaveras, G.	Cal.	500,000	500,000	5	*			
29	Calaveras Con., g.	Cal.	800,000	160,000	10				
30	California, G.	Cal.	1,000,000	100,000	5	9,000	Mar.	1892	.03
31	California Con. I. Q.	Cal.	2,250,000	450,000	10				
32	Camille, g.	Ga.	1,500,000	150,000	5				
33	Carisa, G.	Wy.	500,000	100,000	2	*			
34	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*			
35	Cashier, G. S.	Colo.	500,000	250,000	100	*			
36	Challenge Con., g. s.	Nev.	5,000,000	50,000	10				
37	Cherokee, G.	Cal.	1,500,000	150,000	100				
38	Chollar, s. G.	Nev.	11,200,000	112,000	2	1,827,000	May.	1892	.50
39	Cleveland, T.	Dak.	1,000,000	500,000	10	*			
40	Colchis, s. G.	N. M.	500,000	150,000	5				
41	Colorado, s.	Colo.	1,625,000	325,000	1				
42	Comstock, s.	Utah.	1,250,000	250,000	100				
43	Comstock Tun.	Nev.	10,000,000	100,000	100	35,000	Mar.	1887	.15
44	Con. Imperial, G. &	Nev.	5,000,000	50,000	50	2,062,500	Jan.	1892	.25
45	Con. New York, s. G.	Nev.	5,000,000	100,000	100	110,000	Mar.	1892	.10
46	Con. Pacific, G.	Cal.	6,000,000	60,000	10	198,000	June	1890	.10
47	Con. Silver, s.	Mo.	2,500,000	250,000	5				
48	Cordova Union, g.	Cal.	1,000,000	200,000	5				
49	Crescent, s. L.	Colo.	3,000,000	300,000	100	*			
50	Crocker, s.	Ariz.	10,000,000	100,000	1	165,000	Aug.	1892	.05
51	Crowell, G.	N. C.	500,000	500,000	1				
52	Dahlonega, G.	Ga.	250,000	250,000	10	*			
53	Dandy, s.	Colo.	5,000,000	500,000					
54	Decatur, s	Colo.	1,500,000	300,000					

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares		Assessments.			Dividends		
				No.	Par	Total Levied.	Date and amount of last		Total paid.	Date & amount of last.	
55	Dexter, g. s	Nev..	1,000,000	100,000	10				80,000	Aug..	1892 .25
56	Dunkin, s. L	Colo..	5,000,000	200,000	25	*			390,000	Oct..	1889 .05
57	Elkhorn, s. L	Mont.	1,000,000	200 00	5	*			885,545	Dec	1892 .50
58	Enterprise, s	Colo..	100,000	10,000	10	*			700,00	Dec.	1892 .10
59	Eureka Con., s. L., G	Nev..	1,000,000	50,000	100	550,000	June	1889 .50	5,017,500	Jan	1892 .25
60	Evening Star, s. L	Colo..	500,000	50,000	10	*			1,450,000	Dec.	1889 .2
61	Father de Smet, G	Dak..	10,000,000	100,000	100	200,000	Nov..	1878 1.00	1,125,000	Dec..	1885 .20
62	Franklin, C	Mich..	1,000,000	40,000	25	220,000	June	1871	1,100,00	July	1892 2.00
63	Freeland, s. G	Colo..	5,000,000	200,000	25	*			190,000	July.	1886 .10
64	Garfield Lt., G. s	Nev..	500,000	100,000	5				90,000	April	1888 .12½
65	Glengarry	Mont.	1,000,000	100,000	10				10,000	June	1891 .10
66	Gold Rock	Colo..	500,000	500,000	1					Dec..	1891 .01
67	Golden Reward	S.Dak	1,250,000	250,000	5				65,000	Dec.	1892 .02
68	Gould & Curry, s. G	Nev..	10,800,000	108,000	100	4,591,200	June	1892 .25	3,826,800	Oct..	1870 10.00
69	Grand Prize, s	Nev..	10,000,000	100,000	100	785,000	Jan..	1890 .30	495,000	Mar.	1884 .25
70	Granite, s. L	Idaho	500,000	500,000	1	*			83,400	Nov..	1890 .02
71	Granite Mountain, s	Mont.	10,000,000	400,000	25				12,120,000	July.	1892 .20
72	Great Western, L. Q	Cal..	5,000,000	50,000	100				394,861	Dec.	1892 .25
73	Green Mountain, G	Cal..	1,250,000	125,000	10	*			212,000	Nov..	1881 .07½
74	Hale & Norcross, G. S	Nev..	11,200,000	112,000	100	5,534,800	Aug.	1892 .50	1,822,000	Aug.	1888 .50
75	Hecla Con., s. G. L. C	Mont.	1,500,000	90,000	50				1,920,000	Dec	1892 .50
76	Hel'a Mg.& Red,s.L.G	Mont.	3,315,000	663,000	5	*			197,970	July.	1886 .06
77	Helena & Frisco, s.L	Idaho	2,500,000	500,000	5				170,00	July..	891 .02
78	Helena & Victor	Mont.	1,000,000	200,000	5				80,000	May..	1891 .05
79	** Holmes, s	Nev..	10,000,000	100,000	100	370,000	May.	1890 .25	75,000	April	1886 .25
80	Homestake, G	Dak..	12,500,000	125,000	100	200,000	July.	1878 1.00	4,911,250	Jan..	1893 .25
81	Honorine, s. L	Utah.	500,000	250,000	2	37,500	April	1889 .05	125,00	Sept.	1887 .05
82	Hope, s	Mont.	1,000,000	100,000	10	*			3 8,252	Jan	1893 .25
83	Horn-Silver, s. L	Utah.	10,000,000	400,000	25	*			4,650,000	Dec.	1892 .12½
84	Hubert, G	Colo..	1,000,000	1,000,000	1	*			247,000	Dec..	1889 .00½
85	Idaho, G	Cal.	310,000	3,100	100				5,419,250	Dec.	1892 2.50
86	Illinois, s	N. M.	100,000	100,000	1	*			45,000	April	1889 .20
87	Iron Hill, s	Dak..	2,500,000	250,000	10	134,000	July.	1889 .03	156,250	Nov..	1887 .07½
88	Iron Mountain, s	Mont.	5,000,000	500,000	10	*			215,000	Aug..	1892 .03
89	Iron-Silver, s. L	Colo..	10,000,000	500,000	20	*			2,500,000	April	1889 .20
90	Jack Rabbit, G	Cal..	10,000,000	100,000	100	100,000	Sept.	1892 .10	260,000	Aug.	1891 .10
91	Jackson, G. S	Nev..	5,000,000	50,000	100	237,500	Nov..	1880 .20	60,000	Jan.	1891 .10
92	Kearsarge, C	Mich..	1,000,000	40,000	25	190,000	Oct..	1887 1.00	80,000	Jan.	1890 2.00
93	Kennedy	Cal..	10,000,000	100,000	100				387,000	May..	892 .15
94	Kentuck, s. G	Nev..	3,000,000	30,000	100	454,180	Oct..	1891 .15	1,350,000	Dec.	1886 .10
95	La Plata, s. L	Colo..	2,000,000	200,000	10	*			610,000	Sept.	1882 .30
96	Leadville Con., s. L	Colo..	4,000,000	400,000	10	*			304,000	May..	1892 .03
97	Lexington, G. S	Mont.	4,000,000	40,000	100	*			609,000	Jan..	1890 2.00
98	Little Chief, s. L	Colo..	10,000,000	200,000	50	*			820,000	Dec..	1890 .05
99	Little Rule, s	Colo..	500,000	500,000	1				220,000	Dec..	1891 .02
100	Maid of Erin	Colo..	3,000,000	600,000	5				557,757	April	1892 .25
101	Mammoth, s. L. C	Utah	10,000,000	400,000	250	110,000		1882 .25	1,040,000	Dec..	1891 .10
102	Martin White, s	Nev..	10,000,000	100,000	100	1,275,000	Jan..	1892 .25	140,000	Dec..	1886 .25
103	Mary Murphy, s. G	Colo..	350,000	3,500	101	*			175,000	May..	1888 5.00
104	Matchless, s. L	Colo..	500,000	500,000	1	*			15,000	Feb...	1890 .00½
105	Maxfield	Utah.	3,000,000	300,000	10				117,000	April	1892 .03
106	Mayflower, D. gravel	Cal	1,000,000	100,000	10				100,000	Dec	1892 .25
107	May Naegppa, s. L	Colo..	1,000,000	100,000	1				205,000	Oct..	1891 .03½
108	Minas Prietas, s. L	Mex..	1,000,000	100,000	10	*			350,000	Dec..	1890 .50
109	Minnesota, C	Mich..	1,000,000	40,000	25	420,000	April	1886 1.00	1,820,000	Mar.	1876
110	Mollie Gibson, s	Colo..	5,000,000	1,000,000	5				2,850,000	Jan	1893 .15
111	Monitor, G	S.Dak	2,500,000	250,000	10				45,000	Oct.	1890 .03
112	Mono, G	Cal..	5,000,000	50,000	100	760,000	Sept.	1890 .25	12,500	Mar	1886 .25
113	Montana, Lt., G. S	Mont.	3,300,000	660,000	5	*			2,619,075	June.	1891 12½
114	Morning Star, s. L	Colo..	1,000,000	100,000	10				925,000	April	1891 .25
115	Morning Star Drift, G	Cal..	240,000	2,400	100				111,800	Dec..	1892 3.00
116	Moulton, s. G	Mont.	2,000,000	400,000	5	*			440,000	Nov.	1892 .07½
117	Mt. Diablo, s	Nev..	5,000,000	50,000	100	137,500	June	1880 2.00	210,000	July.	1891 .20
118	Napa, Q	Cal..	700,000	100,000	7				520,000	Jan..	1893 .20
119	Navajo, G. S	Nev..	10,000,000	100,000	100	520,000	May.	1891 .20	229,950	April	1889 .10
120	Newton	Cal	10,000,000	100,000	100				10,000	May..	1891 .05
121	New California, G	Colo..	800,000	160,000	5	*			48,800	May..	1890 12½
122	New Guston, s	Colo..	550,000	110,000	5				1,877,500	April	1892 .75
123	North Banner Con	Cal	1,000,000	100,000	10				20,000	July..	1891 .05
124	North Commonw'th	Nev..	10,000,000	100,000	10				25,000	June.	1891 .25
125	N. Hoover Hill, G. s	N. C	300,000	120,000	2½	*			30,000	Dec..	1885 .06½
126	North Belle Isle, s	Nev..	10,000,000	100,000	100	474,689	Nov.	1892 .10	230,000	May	1888 .50
127	North Star, G	Cal..	1,000,000	100,000	10				350,000	Dec	1892 .50
128	Omaha Cons., G	Cal..	2,400,000	24,000	100				30,000	May..	1892 .15
129	Ontario, s. L	Utah	15,000,000	150,000	100				13,175,000	Oct..	1892 .50
130	Ophir, G. S	Nev..	10,000,000	100,000	100	4,210,640	April	1890 .50	1,595,800	Jan..	1880 1.00
131	Original, s. C	Mont.	1,500,000	60,000	25	*			138,000	Jan..	1889 .05
132	Oro, s. L. G	Colo..	500,000	100,000	5				95,000	July	1890 .20
133	Osceola, C	Mich.	1,250,000	50,000	25	480,000	April	1876 1.60	1,697,500	Dec.	1892 1.00
134	Pacific Coast, B	Cal	1,500,000	15,000	100				360,000	Dec.	1892 1.00
135	Parrot, C	Mont.	1,800,000	180,000	10				1,405,38	Dec.	1892 .10
136	Petro	Utah.	10,000,000	10,000	100				17,500	July.	1891 .75
137	Plumas Eureka, G	Cal..	1,406,250	140,625	10				2,643,559	April	1892 .18
138	Plymouth Con, G	Cal..	5,000,000	100,000	50	*			2,280,000	Feb.	1888 .40
139	Poorman, G. S	Idaho	375,000	3,000,000	125	*			68,260	Sept	1892
140	Quicksilver, pref., Q	Cal..	4,300,000	43,000	100				1,825,911	June	1891 1.25
141	" com., Q	Cal..	5,700,000	57,000	100				645 967	July.	1882 .40
142	Quincy, C	Mich..	1,250,000	50,000	25	200,000	Dec..	1862	6,470,000	Feb	1893 3.00
143	Red Cloud	Idaho	1,000,000	200,000	5				153,100	Dec.	1892 .10
144	Reed National, s. G	Colo..	500,000	500,000	1	*			50,000	Dec..	1891 .01
145	Retriever, L	S.Dak	1,250,000	250,000	5				20,000	Aug..	1891 .03
146	Rialto, G	Colo..	300,000	300,000	1	*			50,250	April	1892 .01½
147	Richmond, s. L	Nev.	1,350,000	54,000	25	*			4,346,32	Aug.	1891 .25
148	Ridge, C	Mich..	500,000	20,000	25	219,939	Mar.	1886 .0	99,785	Feb..	1880 .50
149	Robinson Con, s. L	Colo..	10,000,000	200,000	50	*			585,000	Mar	1886 .05
150	Running Lode, G	Colo..	1,000,000	1,000,000	1	*			36,000	May	1892 .00 1-10
151	Savage, s	Nev..	11,200,000	112,000	100	6,772,000	Feb..	1892 .50	4,460,000	June	1869 3.00
152	Sheridan, s. G	Colo..	300,000	3,000	100	*			300,000	Oct..	1891 2.50
153	Shoshone, G	Idaho	150,000	150,000	1				7,500	April	1883 .01
154	Sierra Buttes, G	Cal..	2,225,000	122,500	10				1,529,307	Oct.	1892 .18
155	Sierra Nevada, s. G	Nev..	10,000,000	100,000	100	6,411,910	June	1892 .25	102,000	Jan..	1871 1.00
156	Sierra Nevada, s. L	Idaho	1,000,000	1,000,000	1	*			40,000	May..	1889 .02
157	Silent Friend	Colo..	500,000	500,000	1				60,000	Aug..	1891 .02½
158	Silver Cord, s. L. G	Colo..	4,500,000	450,000	10				265,000	April	1889 .10
159	Silver King, s	Ariz..	10,000,000	100,000	100	130,000	Nov.	1890 .30	1,950,000	July	1887 .25
160	Silver Mg.of L.V.,s.L	N. M..	500,000	500,000	1				300,000	Dec..	1891 4.05
161	Slide	Colo..	500,000	5,000	100				20,000	Nov..	1891 4.00
162	Small Hopes Con., s	Colo..	5,000,000	250,000	20	*			32,00,000	Nov.	1892 .15
163	Spring Valley, G	Cal..	200,000	200,000	1	50,000	Oct.	.25	50,000	Jan.	1881 .25
164	Standard, G. S	Cal..	10,000,000	100,000	100	100,000	June	.50	3,645,000	Dec..	1892 .10
165	Stormont, s	Utah.	500,000	500,000	1	*			155,000	Nov	1881 .05
166	St. Joseph, L	Mo..	1,500,000	150,000	10	*			1,974,000	Dec..	1890 .02
167	Swansea, g. s	Colo..	600,000	60,000	10				27,000	Mar.	1892 .10
168	Tamarack, C	Mich..	1,250,000	50,000	25	520,000	Aug.	.3.00	3,160,000	Oct	1892 .00
169	Teal & Poe	N. M.	150,000	150,000	1				9,000	Nov.	1891 .01½
170	Tombstone, G. S. L	Ariz..	12,500,000	500,000	25	*			1,250,000	April	1882 .10
171	United Verde, C	Ariz.	3,000,000	300,000	10	*			207,500	Jan.	1892 .10
172	Viola Lt., s. L	Idaho	750,000	150,000	5				337,500	Nov.	1888 .37½
173	Ward Con., s	Colo..	2,000,000	200,000	10				20,000	Dec.	1889 .05
174	Woodside, s. L	Utah	100,000	100,000	10				25,000	Oct..	1885 .25
175	W. Y. O. D	Cal..	30,000	15,000	2	22,500	May.	1891 .10	42,000	Dec.	1892 .10
176	Yankee Girl, s	Colo.	1,300,000	260,000	5				1,405,000	April	1891 1.50
177	Yellow Jacket, G. S	Nev	12,000,000	120,000	10	5,808,000	Sept	1892 .2	2,184,000	Aug.	1871 1.50
178	Yosemite No. 2	Utah.	1,000,000	100,000	10				25,000	Oct..	1891 .05
179	Young America, G	Cal							175,000	Jan.	1887 1.00
...											
...											
...										

COAL, RAILWAY AND OTHER STOCKS.

NAMES OF STOCKS.	Jan. 28. H.	Jan. 28. L.	Jan. 30. H.	Jan. 30. L.	Jan. 31 H.	Jan. 31 L.	Feb. 1. H.	Feb. 1. L.	Feb. 2 H.	Feb. 2 L.	Feb. 3 H.	Feb. 3 L.	Sales
Adams Express	.....	.....	160	.....	160	.....	.....	.....	.....	.....	.....	.....	20
Albany & Susq.	165	.....	.....	.....	.....	.....	.....	.....	.....	.....	165¼	.....	50
Am. B'k Note..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Am Coal.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Am. Cotton Oil.	45½	45¼	45⅝	45½	46½	45¼	46¾	46¼	46⅜	46⅜	46⅜	46⅜	9,636
do. pref.....	81½	.....	82½	.....	.....	.....	82¼	82	81½	.....	.....	.....	1,030
Am. Express ..	.....	.....	120	119	120	.....	120	.....	.....	.....	119¾	118½	117
Am. Dist. Tel .	.....	.....	57	.....	57¾	57½	.....	.....	58½	58	58¾	.....	850
Am. Sugar Ref.	132⅝	128⅝	131	128¼	130¼	127⅝	129⅝	128	130⅛	129⅛	130¼	129⅛	285,933
do. pref.....	104½	104	104	103¾	103⅝	103⅜	103¾	103	103¼	103	103¼	.....	4,945
Am. T. & C.Co.	.....	.....	91	.....	91½	.....	91	.....	91	.....	92	.....	295
Am. Tobacco.	118	116½	118	117	116⅝	115¼	117¼	115	116¾	116	116½	115¾	162,888
do. pref.....	109	108½	108	.....	108	.....	1 71½	.....	.....	.....	.....	.....	2,030
Atch., T. & S.F.	35¼	34⅞	34⅜	34⅜	35	34½	35⅜	34⅞	35⅛	34⅜	34⅞	34⅝	28,953
Atlantic & Pac.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Balt. & Ohio....	97	96	97¼	.....	96	.....	.....	.....	.....	.....	.....	.....	1,280
do pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Balt. & O., S.W.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pfd.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
B., C., R. & N.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bos. A. L. pfd..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buff. R. P	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canad'n Pacific	.....	.....	87½	.....	87	.....	.....	.....	.....	.....	.....	.....	208
Canada South..	58	57¾	58⅜	57½	57⅞	57¾	58¼	57⅞	58	57	57½	.. ..	5,680
Cen. Iowa.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CentralPacific	29	.....	29	.....	.....	.....	28¼	.....	28¼	.....	.....	.....	454
Char., Col. & A.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ches. & Ohio ..	23¼	.....	23	22¾	23⅜	23	23⅝	23⅜	23⅝	23½	25⅛	23¾	29,987
do. 1st pref..	.....	.....	.....	.....	.....	.....	.....	.....	63	.....	63⅝	.. ..	107
do. 2d pref...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chic. & Alton...	.....	.....	.....	.....	145	.....	145½	144	.....	.....	.....	.....	127
do. pfd.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chic., Burl. & Q.	102¾	102½	102½	101¾	102½	101¾	102⅞	102⅛	102⅝	101¾	102¼	101⅝	19,363
Chic. & East Ill.	71	.....	70⅝	70	70	.....	70⅜	70	71¼	70⅜	70	.....	1,110
do. pref.....	.....	.....	.....	.....	.....	.....	104¾	103½	104⅝	104	104	.....	900
Chic. Gas Trust.	91¾	9 3⅜	90⅜	89	91¾	89¼	92⅜	91⅜	92	91⅜	91½	91¼	40,782
Chic., Mil.& S.P.	81⅜	81⅜	81⅛	80	81⅝	80⅛	82⅛	81	82⅛	81⅝	.....	.....	93,923
do. pref.....	125¼	.....	125	125	124⅜	....	125¼	125	125¼	125¼	.....	.....	1,348
Chic. & N'west.	114⅜	114¼	114⅜	1 13½	114⅜	114	116⅛	114⅛	115⅞	115	.....	.....	9,362
do. pref.	.....	.....	146	.....	146	.....	.....	.....	.....	.....	.....	.....	170
Chic., R.I.& Pac.	87¼	87⅛	87¼	86¼	87¼	86⅜	88	86⅞	87⅞	87¼	.....	.....	37,723
Chi.,S.P.,M.&O.	....	.....	....	.....	....	.....	.....	.....	.....	.....	57⅝	54⅛	21,670
Chi. Stock Yds.	.....	.....	.....	.....	.....	.....	.....	.....	105	.....	.....	.....	150
do. pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cit. Gas, Bklyn.	.....	.....	.....	.....	108½	.....	.....	.....	.....	.....	.....	.....	37
C., C., C.& St. L.	58	.....	58	56¾	57½	57	58¼	57½	57½	57	57½	57⅛	3,805
do. pref.....	.....	.....	98¾	.....	.....	.....	97	.....	98	.....	.....	.....	90
Clev. & Pitts ...	.....	.....	157	.....	.....	.....	.....	.....	.....	.....	.....	.....	14
Col. C. & I.....	.....	.....	23½	23	22½	.....	23¾	23¾	23½	23¼	24⅛	23¾	4,520
Col. Coal.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Fuel..	.....	.....	64	63½	64⅛	64	65	64	65⅞	64¼	66¾	65¾	9,223
do. pref.....	.....	.....	.....	.....	108	.....	.....	.....	107½	.....	.....	.....	103
Col., H V.& Tol.	32	31	31	30⅜	.....	.....	30½	.....	30¾	.....	30¾	.....	1,920
do. pfd	.....	.....	23½	23½	.....	.....	.....	.....	7 5½	.....	.....	.....	30
Col. & H. Coal..	24½	24⅛	23	21	22	21	22	21	22	21½	23¾	22	5,140
do. pfd.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Conner.Cable.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Coal.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons Gas.	135¾	135½	136¼	135	138	135¾	138¼	137	137¼	135½	136⅞	136	9,007
Del. & Hud. C...	138⅛	136¾	137	136¼	137⅜	136¾	137¼	135½	135⅞	133¾	134⅝	134⅛	12,367
Del., L. & West.	156¼	155⅛	155½	154	155⅜	154½	155⅝	154⅛	154⅝	153¾	154	153⅛	2,618
Des. M. & Ft. D.	.....	.....	.....	.....	.....	.....	9 4¼	.....	.....	.....	.....	.....	300
Denv. & Rio G.	.....	.....	.....	.....	17½	.....	18	.....	.....	.....	.....	.....	205
do pref	56¾	56	55⅝	75	55½	....	56⅜	55½	56¾	56	56¼	55¾	7,355
Dis. & C.F. Tr'st	48½	46¾	41	38	42	36½	40	34	42	40	41⅜	39⅝	582,549
do. ex-div...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dul., S. S. & A..	.....	.....	.....	.....	.....	.....	13 1½	13¾	13½	13	13¾	.....	2,200
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
E. T., Va. & Ga	.....	.....	43¼	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
do 1st pref...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. 2d pref...	.....	.....	.....	.....	.....	10¾	... .	93¾	.....	10⅛	10	.....	450
Edison Ill. Co. of N. Y ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Edison E.L.Co.	.....	.....	125½	125	125½	125	124½	.....	125½	125	125½	125	1,116
Edison Gen. El.	111¼	110⅝	111	110⅝	110⅞	110¾	111⅞	111	111¾	110¾	111¾	111	7,800
do. pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erie & West....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Evans. & T. H..	.....	.....	.....	.....	145	.....	145½	.....	.....	.....	.....	.....	350
Flint & P. M....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gt. Nor. pref .	.....	.....	187½	.....	.....	.....	.....	.....	.....	.....	.....	.....	275
Green B. & W..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. t. r.....	.....	.....	13½	.....	13½	.....	13⅝	13½	.....	.....	.....	.....	1,050
G. B. & W., pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. t. r....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Houston & Tex.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hunt. & B.Top.	.....	.....	.....	.....	.....	.....	.....	.....	38¾	.....	.....	.....	8
do pref.....	.....	.....	.....	.....	.....	.....	.....	.....	54½	.....	.....	.....	110
Ill. Cent.....	103	102⅞	102¾	102⅝	103¼	102¾	.....	.....	102⅞	102¾	102¾	.....	1,820
Int. Cond.& Ins	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa Central...	.....	.....	.....	.....	.....	.....	10	.....	10	.....	.....	.....	150
do. pref.....	.....	.....	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Kan'wha&Mich	.....	.....	.....	.....	14	.....	.....	.....	.....	.....	.....	.....	33
Keokuk, D. M.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laclede Gas....	.....	.....	.....	.....	.....	.....	.....	.....	24½	.....	.....	.....	200
do. pref.....	73¾	.....	72¾	.....	74	.....	74	.....	.....	.....	.....	.....	240
Lake Erie&Wes	.....	.....	23½	.....	24	23¼	24	.....	23⅝	.....	24½	24	1,345
do. pref. ...	80⅞	80¾	80	.....	78¾	.....	79	.....	78¼	78	79	78½	1,347
Lake Shore	131⅝	131	131	130⅜	130¼	130	131	130½	130¾	130	.....	.....	1,990
Lehigh C. & N..	54⅛	53⅞	54⅛	54	....	.....	.....	.....	54⅜	.....	.....	.....	140
Lehigh Valley .	61⅛	61	61¼	60⅞	.....	.....	.....	.....	60½	60⅝	.....	.....	3,707
Long Island....	115½	.....	..	.....	113	.....	.....	.....	113	.....	.. ..	.....	300
do. ex-div....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
L. Erie & St. L.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisv'le &N'sh	76	75⅝	75⅛	74¼	76	75	76¾	75½	76⅝	75¾	75⅞	75⅝	25,751
Louis., E. & St.L	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
L., N. A. & C....	.....	.....	25⅜	25⅛	25	.....	25	.....	25⅜	24½	.....	.....	1,110
L., St. L. & T....	25	.....	.....	.....	23¼	.....	24¾	.....	25¼	.....	.....	.....	400
Mahoning Coal.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
ManhattanCon.	161¼	161	162	157¾	163	157	162½	159⅛	162½	161½	168	162	25,444
Marshall Coal..	.....	.....	.....	.....	.....	.....	25½	.....	.....	.....	.....	.....	200
Memphis & Char.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexican Cent..	.....	.....	..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Michigan Cent.	.....	.....	106½	106	106¾	106	.....	.....	106	.....	.....	.....	1,090
Minnesota Iron.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Minn. & St. L..	.....	.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	350
do pref...	.....	.....	.....	.....	.....	.....	48¼	48	48½	.....	.....	.....	100
M., L., S., & W..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
M., Kan. & Tex.	15	.....	.....	.....	.....	.....	15⅜	15¼	.....	.....	.....	.....	1,350
do. pref.....	.....	.....	26	25	25⅞	25½	26⅜	26	.....	.....	.....	.....	3,405
Missouri Pac ..	58¾	58¼	58⅜	57	57¾	57¼	58⅜	57⅝	58¼	57¾	58	.....	9,115
Mobile & Ohio .	.....	.....	.....	.....	34½	.....	34	.....	.....	.....	.....	.....	202
Morris & Essex.	.....	.....	.....	.....	.....	.....	153½	.....	.....	.....	.....	.....	100
Nat. Cord. Co...	141¾	141¼	141¼	140¾	141	140	141½	140	144½	142	.....	.....	10,155
do. pref	116	.....	115¾	115	115	.....	115	113	116¾	115	.....	.....	3,185
do. New	.....	.....	.....	.....	.....	.....	.....	.....	72½	71¼	72¼	71½	26,202
Nat. Lead Co...	50⅛	49¾	49¾	48	49	48¼	50	48¼	49¼	48⅝	48⅝	48½	6,09 1
do. pref.....	.....	.....	95¼	94½	94⅞	.....	95	94½	94⅜	94⅛	94⅞	.....	712
Nat.Linseed Oil	.....	.....	39¼	39	38½	.....	38¾	38⅜	38⅛	.....	38⅛	.....	1,080
Nat. Starch.....	29	.....	28½	25½	27	25½	27	25½	25¾	.....	26½	.....	3,196
do 1st pref...	102½	.. ..	102	.....	102	.....	.....	.....	.....	.....	.....	.....	200
do. 2d pref	.....	.....	99	.....	95½	.....	.....	.....	96	95½	.....	.....	260
New Cent. Coal.	.....	.....	11⅞	.....	11⅞	.....	.....	.....	11⅞	.....	.....	.....	500
N. C. & St. L....	.....	.....	.....	.....	.....	.....	89¾	.....	.....	.....	.....	.....	125
N. J. Central...	86¾	.....	129⅞	129	130	129	129	.....	128	127	.....	.....	1,885
N. Y. Central...	111¼	111	110½	110¼	110½	110⅜	110⅝	110½	110¾	110¾	110¾	.....	2,350

COAL, RAILWAY AND OTHER STOCKS.

NAME OF STOCKS.	Jan. 28. H.	Jan. 28. L.	Jan. 30. H.	Jan. 30. L.	Jan. 31. H.	Jan. 31. L.	Feb. 1. H.	Feb. 1. L.	Feb. 2. H.	Feb. 2. L.	Feb. 3. H.	Feb. 3. L.	SALES.
N.Y.,Chi. & St.L.	.. ..	.. ..	18¾	....	18¾	....	19	.. ..	18¾	.....	...	.....	550
do. 1st pref....	37½	36⅝	38¾	36½	37	.. ..	37¾	.....	.....	.....	.....	.....	.....
do. 2d pref....	.....	.....	113¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	605
N. Y., L. & W.	.....	.....	.....	.....	.....	.....	114	114	.....	.....	.....	.....	172
N. Y., L. E.& W.	26	25⅞	25⅝	24⅞	25⅝	24⅝	25⅞	25⅛	25⅛	25¼	2 ¼	25⅛	11,500
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	56¼	56	56¾	.....	300
N.Y., N.H.& H'rt	47⅝	47⅜	47⅜	46¼	48	47	48½	46⅞	47⅝	46⅞	49	47¾	48,601
N. Y. & N. Eng.	19¾	.....	19¾	.....	19½	19½	19¾	19¾	19½	.....	.....	.....	1,180
N.Y., Susq. & W.	.....	.....	6½	.....	6½	..	70	70	69¾	.....	.....	.....	850
do. pref.....	.....	.....	.....	.....	16	.....	.....	.....	33	.....	.....	.....	50
N.Y. & North....	34¾	34½	34¾	34⅜	33	34⅜	34⅜	33½	.....	.....	34¾	34	6,555
do pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Norfolk South..	.....	.....	.....	.....	.....	.....	9¾	.....	.....	.....	.....	.....	10
N. & West.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.....	.....	.....	11¼	11	11	.....	11	10⅞	.....	.....	11¼	11	1,587
Nor. Amer. Co..	.....	.....	17⅞	17⅝	17½	17½	18¼	18	18¼	.....	18¼	.....	2,200
North. Pacific..	48⅜	47⅝	48⅝	47⅝	48¼	47¾	49⅝	47¾	49¼	48¾	49⅝	48⅞	15,621
do. pref.....	.....	.....	.....	.....	24½	.....	25	.....	.....	.....	.....	.....	300
Ohio & Miss....	.....	.....	.....	.....	.....	.....	44½	.....	44	.....	.....	.....	220
Ohio Southern...	.....	.....	44	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ontario & West.	18⅞	18¾	18¾	18½	18⅝	18⅝	19	18⅝	19	18¼	18¾	18⅝	5,8 2
Oregon Imp....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ore. R. & N....	.....	.....	78	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
Ore., St. L. & U. N....	.....	.....	22¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Pacific Mail....	25⅝	25⅜	26⅝	26½	26⅝	26⅜	26¼	25⅝	25⅝	24⅞	25⅝	24⅝	2,550
Penn. R. R.....	55⅝	55⅛	55¼	55	.....	.....	.....	.....	55⅝	55	.....	.....	4,317
Peoria, Dec. & Ev. R.....	.....	.....	17¼	17	.....	.....	16⅞	16⅜	17	.....	16¾	.....	740
Phil. & Reading.	52⅜	52¼	52⅜	50⅜	51½	50½	51½	49¾	50⅝	48¾	51¼	49¾	399,440
Pitts., F.W. & C	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pitts. & W., prf..	.....	.....	37¼	.....	.....	.....	36½	.....	.....	.....	.....	.....	200
P., C., C. & St. L.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pullman P. C. Co.....	.....	.....	198¾	198½	.....	.....	198	.....	197½	.....	.....	.....	300
Rens. & Sara....	.....	.....	176	.. ..	.....	.....	179	.....	.....	.....	.....	.....	..
Rich. & W. P..	10⅝	10⅜	1 ¼	9⅞	10¼	10	10⅜	9⅞	11	10¼	12	11⅜	138,686
do. pref.....	39	.....	38	37¾	37⅝	.....	37⅝	.....	39	37½	.....	.....	1,450
Rio Grande &W do. pref.....	62½	.....	.....	.....	62½	.....	.....	.....	.....	.....	.....	.....	13
Rome, W & O...	112	.....	112½	.....	.....	.....	.....	.....	111¼	.....	.....	.....	200
So. Cotton Oil..	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
So. Pacific.....	33¾	.....	33⅝	33½	33¾	33½	33¾	33⅝	.....	.....	33⅝	.....	1,9 0
St. L. & San. Fe.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. L. & Southw.	.....	.....	7	.....	.....	.....	.....	.....	7⅝	.....	.....	.....	110
do. pref.....	.....	.....	13⅞	.....	14¼	.....	.....	.....	14	.....	.....	.....	200
St. P. & Duluth..	46	.....	45⅜	.....	46	.....	.....	.....	.....	.....	.....	.....	300
do. pref.....	.....	.....	108	107	.....	.....	.....	.....	.....	.....	.....	.....	98
St. Paul, M.&M..	.....	.....	.....	.....	.....	.....	114	112¾	.....	.....	.....	.....	550
St.Paul &Omaha	51¾	51½	51½	50⅝	53⅜	51⅝	57¾	53⅜	56	54⅝	.....	.....	48,825
do. pref.....	.....	.....	.....	.....	119½	119	120¾	1 9⅝	120¾	119⅝	.....	.....	4,172
Tenn. C. & I....	34¾	33⅝	35¾	34½	36	35½	35¾	34½	35½	34¾	35½	34¾	4,20 0
do. pref.....	.....	.....	.....	.....	.....	.....	102	100	1 2	100¼	.....	.....	200
Tol. & O. Cent....	.....	.....	.....	.....	50	.....	.....	.....	.....	.....	.....	.....	4
do. pref	.....	.....	.....	.....	79	....	.....	.....	.....	.....	.....	.....	8
Texas Pacific. ...	10	9¾	9⅝	9½	9⅝	....	10	9½	.....	.....	9⅞	9¾	2,750
do. Land Tr ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tol , A.A.&N.M..	40	39½	40	38⅞	40½	39¾	40⅝	40	40	39¾	39½	39⅜	7,230
Tol., St.L.& K.C.	.....	.....	.....	.....	14	.....	.....	.....	.....	.....	.....	.....	100
do. pref.....	30¾	.....	30¾	.....	29½	.....	30½	29	.....	.....	.....	.....	1,400
Union Pacific ...	42⅝	42¼	41¾	40⅝	41½	40⅝	41⅞	41	41⅝	41⅝	41⅜	40¾	48,923
do. Den. & G...	.....	.....	.....	.....	.....	.....	.....	.....	16⅜	15⅜	16¼	.....	200
U. S. Express....	70	69½	70	.....	5 4½	.....	70	69¼	69¾	68	.....	.....	1,654
U. S. Rubber....	47¼	45⅜	46	45	46⅛	45	46½	44	46	.....	45¼	45	3,720
do. pref.....	.....	.....	96¾	94⅝	95	.....	97	45⅜	96⅝	96	.....	.....	952
Wab., St.L.& P..	.....	.....	11⅜	11½	11¾	.....	.....	.....	.....	.....	11½	.....	1,2 5
do. pref. ...	25¼	.....	25⅜	25	.....	.....	25¼	24¾	24¾	.....	25	24½	1,100
Wells, Fargo Ex	146	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Western Union.	99	98⅝	98⅜	97¼	98½	97¾	98⅝	98⅛	98⅞	98⅜	98⅞	98⅛	28,073
do. ex-div.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheel. & L. E..	.....	.....	2¾	19¾	.....	.....	.....	.....	20¾	..	20⅛	20	1,535
do. pref.....	65	.. ..	65¼	64½	65½	.....	.....	.....	65¾	64½	65⅛	.....	942
Wisconsin Cent.	.....	.....	.....	.....	.....	.....	.....	.....	15⅜	.. ..	.....	.....	100

Total shares sold, 2,428,282.

San Francisco, Cal.

NAMES OF STOCKS.	CLOSING QUOTATIONS. Jan. 27.	Jan. 28.	Jan. 30.	Jan. 31.	Feb. 1.	Feb. 2.
Alpha.....	.....	.....	.....	.....	.....	.....
Alta.....	.10	.10	.10	.10	.15	.10
Belcher....	.85	.85	.85	.90	.70	.95
Belle Isle..	.....	.....	.....	.....	.....	.....
B. & Belch	1.25	1.30	1.30	1.30	1.25	1.45